



# AMERICAN FORESTS



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# AMERICAN FORESTS

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## The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

## The History

MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force,—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

## The Record

THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nation-wide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

## The Support

FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state in the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

## The Program

BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.



# My Favorite Tree



By EARL SNELL  
Governor of Oregon

THE tall and stately ponderosa pine, the most important tree species in my home section of Oregon—the eastern part of the state—is my favorite among the many splendid and vigorous types of trees in this heavily-forested state.

Magnificent stands of ponderosa pine add to our forest resources on several million acres throughout the state. The tree has a massive straight bole with slight taper of the trunk to the larger branches. The crown is long and narrow, with scattered up-turned branches that give an open appearance. The pine needles are from four to twelve inches long and the cones from three to five inches. The trees average from three to four feet in diameter and from 100 to 125 feet in height. Some splendid specimens grow to eight feet in diameter and to more than 200 feet in height.

The beauty and rugged strength of the pine, the fresh and invigorating aroma of its branches, and the associations and nostalgic memories it brings of the pleasures enjoyed in its forests from boyhood combine to place the ponderosa first in my esteem.



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### Congratulations, Girl Scouts

SIR: You might be interested to know that in 1945 Intermediate Girl Scouts (between the ages of 10 and 14 years old) earned 7,930 Tree Finder Badges, as against 6,365 in 1944. This is an increase of 1,565.

Will you accept our thanks and appreciation for all that The American Forestry Association has done, in the way of advice, encouragement, and literature, to make this increase possible.—*Marie E. Gaudette*, Nature Adviser, Girl Scouts, New York.

### The Deer Fly Is Slowed Down

SIR: Your article about the diseases of animals ("When Animals Get Sick"—January Issue) had a very interesting mistake in it. It concerned the speed at which a certain kind of deer fly passes through the air. Twelve hundred feet a second is 6,000 feet in five seconds, or 72,000 feet a minute. This is at a rate of 13.5 miles a minute, or 800 miles an hour.

This particular mistake was originally made by some careless entomologist and accepted as gospel fact. I can remember seeing it in Ripley and in speed comparisons of various animals, etc.

The statement remained uncontested until some doubting engineer got out his slide rule and produced some facts regarding the fly in question. He figured wind resistance at that speed, fuel consumption, required energy, etc. I can't recall his conclusions, but the said fly would have to be refueled every second or he'd expend himself in energy required to overcome resistance.

He also questioned the method, if any, used to determine the fly's speed and concluded that outside of very delicate electrical apparatus this could not be done.

I have heard these deer flies myself. They do sound like a bullet going by but they don't—and you can depend on this—fly at 800 miles an hour.—*John A. Shartle*, Troy, Ohio.

### Our New Format—Pro and Con

SIR: I do not like the cover on the January issue . . . it is sort of cheap and ordinary looking, too much like a poster. I liked the old covers much better.

I do not care for the "Contents Page," but I can endure it. I do not like "My Favorite Tree" page—looks too much like an advertisement. I do not like the cartoon heading for the excellent article "When Animals Get Sick." Kid stuff. But I do like "Pine Along the Gulf." It is for photographs such as this that I subscribe.—*Anne Estelle Orr*, Dallas, Texas.

SIR: May I compliment you on the new format. I think it is most attractive, and quite in line with these progressive times.—*Anna C. Allen Holst*, Cowesett, Rhode Island.

SIR: I don't like the new cover design. It's an atrocity—the old one is superior. I must say the same thing for the new format as a whole.—*T. H. George*, Wellsburg, West Virginia.

SIR: Congratulations on the January issue. It is your best yet and I like the way you have "sparked" up the layouts and added color. — *S. L. Frost*, Texas Forest Service, College Station, Texas.

SIR: I think it is a pity that the magazine is made to look second rate in its appearance by the modernistic drawings in the January number.—*Miss Netta Reitan*, New York.

SIR: I certainly like the new format and style. I think it is a big improvement over that of recent years. The face-lifting job is well done. Congratulations. — *Monty Payne*, Head, Department of Forestry, Mississippi State College.

### Pilots Take Note

SIR: With reference to Timothy G. Stillman's letter in the Exchange for January (Aircraft as a Forest Hazard), we have for a long time been bothered by what appears to be un-

necessary instances of reckless flying over our wilderness area. While no accidents have occurred, yet if these practices are permitted to continue, it is only a matter of time until something serious will happen. And when it does, a bad fire is almost certain to result.—*Heath Angelo*, Branscomb, California.

### Look What Mr. Dirnock Started

SIR: There is little to be gained in criticizing a criticism. However, to keep the records accurate we suggest that Mr. A. B. Dirnock (see The Forest Exchange, January issue) should have also consulted the works of Charles S. Sargent or George B. Sudworth concerning the hemlock in Stewart Holbrook's article "Loopers in The Big Timber" (October 1945, issue). *Tsuga canadensis* Carr., is eastern hemlock and is not indigenous anywhere west of the Mississippi River. The two hemlocks occurring in the West are western hemlock, *Tsuga heterophylla* (Raf.) Sargent, and mountain hemlock, *Tsuga mertensiana* (Bong.) Sargent. The former is larger than any of the other hemlocks and is the valuable tree to which Mr. Holbrook referred.

One could also question the validity of the assertion that poison hemlock, *Conium maculatum* L. was the plant that laid Socrates low since to quote from Dr. Willis L. Jepson, outstanding plant taxonomist: "*Cicuta* L. water hemlock, (Classical name of the hemlock, which was given to criminals, and sometimes, when the Greeks had a superfluity, to philosophers, as a death-poison)." Obviously, the question is purely academic since the plants in Socrates time had not been classified as they are today.

It may be of interest to know that some people are allergic to the hemlock trees and react in a manner similar to poison oak poisoning.—*Lee O. Hunt*, Julian, California.





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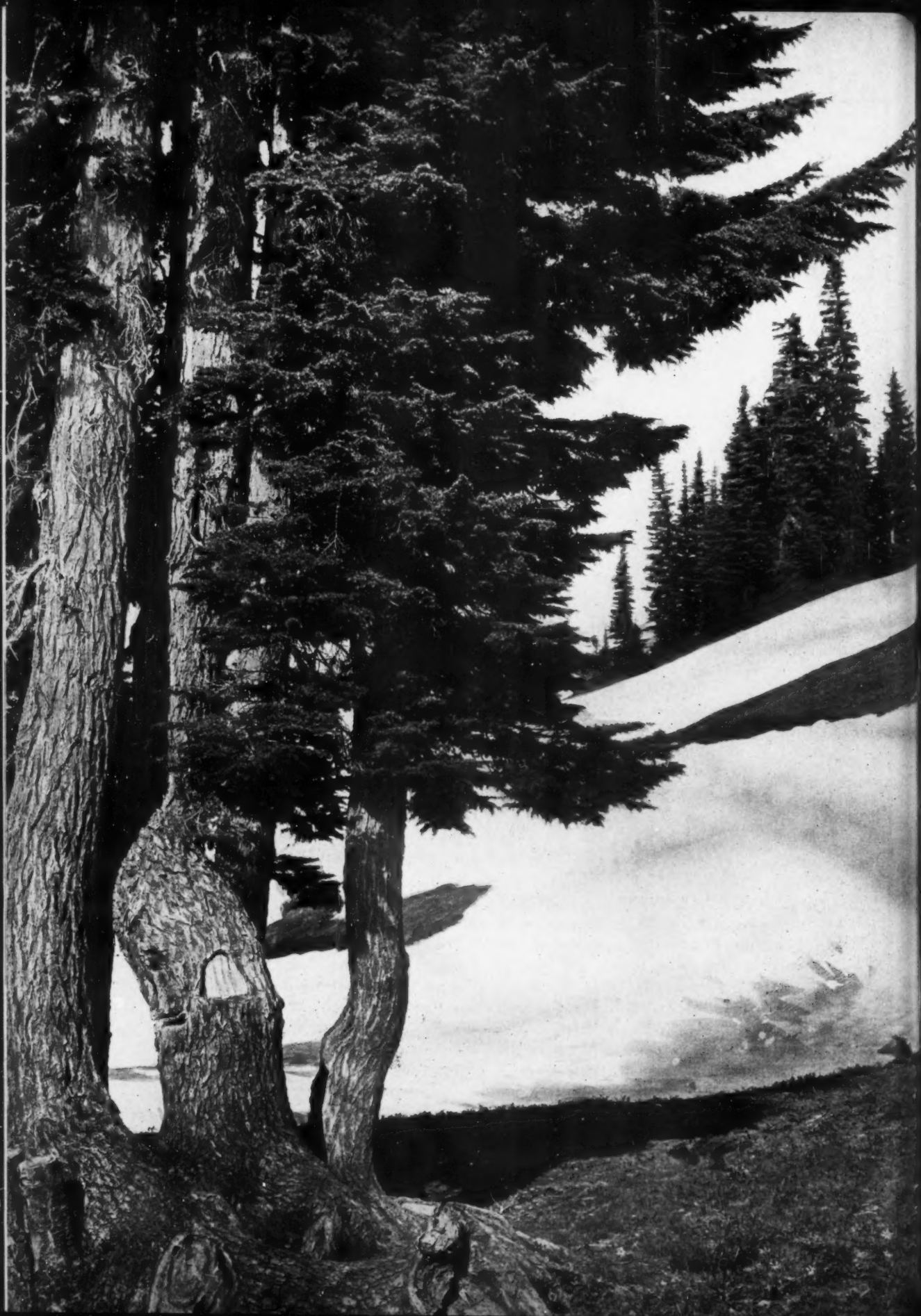
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# Editorial

## THOSE THREE MILLION LOW-COST HOMES

THE government's recently announced program to relieve the housing shortage for veterans by building nearly three million low-cost homes during 1946 and 1947—a million and a quarter this year—brings lumber, high on the critical material list during the war, sharply back into the national spotlight. Coming at a time when lumber production is at its lowest point since 1938, a good many people and industries are wondering if the short rations of war are to become even shorter. And not a few are fearful that mounting demands, particularly when labelled urgent, may react to the detriment of good forest practices in the handling of the resource.

There is reason for concern on both scores. The present emergency calls for realistic planning and decisive action. It is estimated that the housing program will require 7,775,000,000 board feet of lumber in 1946 and 11,050,000,000 feet in 1947. In addition, there will be demand this year for around 1,600,000,000 square feet of plywood—considerable more in 1947. Looking only at 1946, lumber requirements, including housing, are estimated at 35,875,000,000 board feet, which is just under the peak wartime production of 36,500,000,000 feet in 1941.

The problem of meeting this demand is indicated by the fact that at the end of 1945 the rate of lumber production had declined to 23 billion feet, or nearly 13 billion feet short of present requirements. The plywood picture is even more disconcerting. Against the 1,600,000,000 square feet needed to meet just housing requirements, plywood mills are straining to maintain last year's total production rate of 1,200,000,000 square feet. As to reserve stocks—both in lumber and plywood—they are non-existent.

The obvious conclusion is that only by stepping up production to wartime levels can wood requirements for the housing program and for industry, agriculture and other essential uses

be met. The outlook on this score is not encouraging. Production can and undoubtedly will be substantially increased, but few familiar with the current situation expect a 1946 production even approaching war levels. The most hopeful course of corollary action which will help meet the emergency, we think, lies in intelligent allocation of production—a well planned and executed system of channeling the output of the mills to those purposes for which it is most needed from the standpoint of maintaining the country's economic and social balance through the shortage period.

Increased production depends, of course, on many factors, particularly cost-price relationships, availability of labor, equipment and stumpage, and weather conditions. It is well to keep in mind that to achieve the high levels of war production, it was necessary to call upon the output of farm woodlots and other small holdings and to saw up logs which otherwise would not have been utilized because of their low quality. And often the industry, in order to service the war, produced lumber at little or no profit. Obviously, now that the war is over, industry cannot be expected to resume these types of operations.

When it is recalled that 75 percent of wartime lumber production went into military channels, the question might well be asked why, with even a minimum production of 23 billion board feet, there should be any great problem in meeting a return to civilian economy. One answer is that, deprived of lumber for four years, the country has built up an enormous backlog of unfilled demands. For example, there is need this year for about eight billion feet of lumber for maintenance and repair; boxes and crates to move perishable vegetables, citrus fruits and other produce and products to markets calls for six billion feet; industry, farmers, commerce, public works, and the Army and Navy will need almost five billion feet; and another five billion is

needed for the manufacture of wooden articles. Then, if lumber is to move freely into commerce, an additional four billion feet will be needed to build up stocks. This, of course, is topped by the housing lumber bill of almost eight billion board feet.

If these needs are not met, and it seems a foregone conclusion they will not be—common sense dictates that some form of distribution control is essential. Only in this manner, it would seem, can a general breakdown in lumber economy be prevented and damaging black market in lumber be eliminated. Only in this manner can lumber be channeled to where it is most critically needed. By assuring that the most essential demands are met to the extent that production permits, the government will be able to minimize a crisis which might result in an all-out drive, as in the war period, to produce lumber regardless of the cost to the forest resource and the policies guiding its handling. As a case in point, it has already been suggested within the government that sustained yield practices on some of the more accessible timberlands be suspended as a possible means of increasing lumber output.

The Civilian Production Administration has established a form of distribution control to insure the veteran housing program of receiving its share of lumber. A similar control is being formulated for plywood—for housing only.

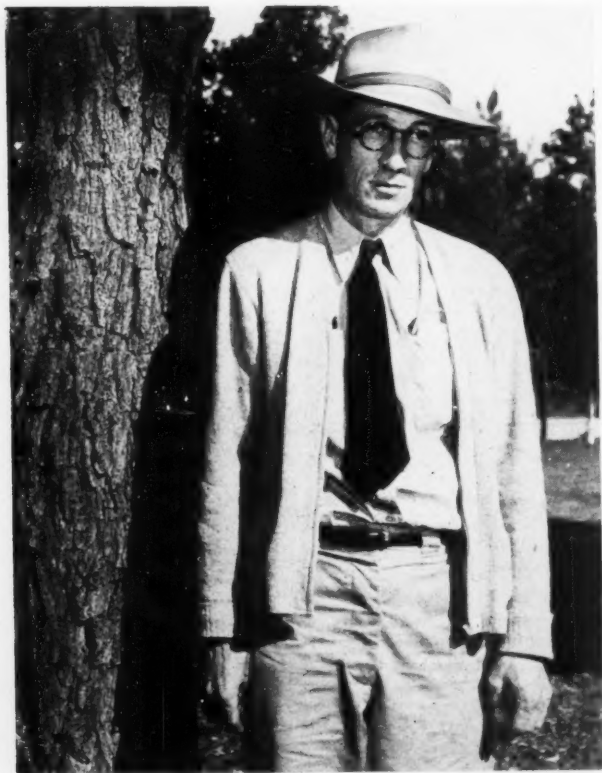
It is to be hoped that these controls will be successful. At the same time we think that if the limited supply of lumber which will be available this year and possibly next is distributed so that the whole national economy moves ahead, the veterans will be more assured of having their lumber needs met than if the control system is limited to only one segment of the national reconversion problem. In addition, the veterans would receive long-time benefits growing out of a more balanced and forward-moving national economy.



# Growing Profits in Pine

By S. L. FROST

The South is being shown the way in a practical demonstration of methods at the Crossett Experimental Forest



Russell Reynolds, director of the Forest, is showing landowners there is money in tree harvesting

**D**OWN on a little piece of forest land in southern Arkansas, hardly bigger than two square miles, hard-working foresters of the federal government are finding that the South, instead of being called the "Nation's No. 1 economic problem," might better be labelled the "Nation's No. 1 economic opportunity." The studies of these foresters with pine trees have attracted southwide attention, gained the support of Congress, and shown the timber grower and manufacturer an exciting new horizon of ways to put their forest land to work on a better business basis.

Pointing to the future that lies ahead for southern timber farmers, Russell R. Reynolds, forester in charge of the Crossett Experimental Forest, says: "There's money in your trees if you treat them right."

Finding ways to treat trees right is Reynold's business.

For 11 years he has studied tree growth on this 1,680-acre forest. He has done everything to timber that a man could possibly do. He has cut, thinned, burned, planted and harvested trees in more ways than you can count on your fingers. And he is coming up with answers that are setting the pace for new concepts in managing the timberlands in southern Arkansas and northern Louisiana. Many of his findings have an even wider application.

The "laboratory" of this tree farmer is the Crossett Experimental Forest, located eight miles south of the modern forest industrial town of Crossett. It is operated by the Southern Forest Experiment Station, a division of the U. S. Forest Service. The land in the forest was given to the government by the Crossett Lumber Company, with 20 years in which to return to the company a volume of timber equivalent to the merchantable volume on the forest in 1937, the date of the deed. After this period, title to both land and timber will rest with the government. Recently the company leased the government an additional area, making the total area on the forest around 3,500 acres. The second-growth shortleaf, loblolly pine-hardwood timber is representative of the average to better forest area found in some 19 million acres in the western part of the southern pine region.

Back in 1934, when Reynolds first looked out of his office window at the Crossett Forest, he was alarmed by the large amount of low-grade hardwood trees which were crowding out the more valuable pine. The "hardwood invasion" was worrying lots of foresters in the South. Following the cutting of old-growth pine, the low-value hardwoods were given every opportunity to crowd the young pine which seeded back after the cutting. As a result, the potential pine production was only about half of what it should be. Reynolds estimated that one nearby lumber company was losing \$2.50 an acre every year that the poor hardwoods were permitted to grow on their better pine lands.

After battling 10 years with the problem, Reynolds still isn't sure that he knows all the answers. He says that the hardwood problem reminds him of the story about the lady and her dandelions. She tried digging them out; she tried poisoning; she tried oil; and she tried fire and brimstone. But every time she turned around there were those pesky dandelions just as pert as ever. Finally, in desperation, she related her troubles to the county agricultural agent. "What shall I do?" she asked. The agent thought a minute. "Lady, I suggest you learn to love 'em!" was his reply.

That is Reynold's advice in regard to hardwoods, because he says, they will never be eliminated. Finding ways to keep them under control is one of his "headaches." He believes though, that once pine timber stands are cleared of the larger low-grade hardwoods, 75 percent of the problem will be licked. Restricted markets for those trees stand in the way at present, but a hopeful market for pulpwood is just





Above: Thinning study in "old field" pine where growth has averaged almost a cord an acre a year  
 Below: In the "farm forestry forty" annual cuts remove an amount of timber equivalent to the growth





developing. Some mills are starting to use hardwoods and others are planning expansion along that line. "Give us a shortage of pine pulpwood and the paper mills will of necessity use hardwoods," Reynolds believes "This will give pine forestry in the South a huge boost."

Some foresters have advocated clear-cutting pine timber in spots where the poorer hardwoods prevail, followed by fire. This has been tried at Crossett, and although tests are incomplete, the system has not as yet proved its merits. It has been estimated that only two percent of the area in southern Arkansas would be helped by such cutting and burning practice.

With a good sharp ax and a saw Reynolds figures that most of the hardwood problem can be handled satisfactorily. When young pine is overtopped by hardwoods at Crossett, the hardwoods are cut out. A nearby market for the cull trees helps to make this "weeding" pay for itself in all but the worst cases.

Wise use of the ax and saw are Reynolds "prescription" for most forest stands in the South. Trees, he holds, are like most any other farm crop. They need to be weeded, cultivated and then harvested when ripe. "We call it timber farming," he says.

To back up his statement, he points with pride to his records. Growth on one tract that has not received care has been about half that on tracts thinned and properly tended. At this point, the forester likes to talk about "growth percent." From a carefully compiled record he will explain that growth of the unmanaged tract has averaged 3.2 percent as compared to 7.6 percent on the managed area. In other words, for a tract of timber worth \$40 an acre, he says the yearly increase amounts to \$3.04 when handled right as compared to only \$1.28 an acre when left alone.

"When you show a timberland owner how he can add money like that to his pocketbook, you usually sell him some forestry," Reynolds states.

A can of paint and a brush, along with the ax, are listed by Reynolds as the equipment necessary to set a person up in the forestry business. Unless planning on cutting all the trees for a special study, the men on the experimental forest mark every tree to be cut with a dab of paint. In this way, they are sure of what will be taken out. This tree-marking system runs the cost up, but the result shows up in the profit column when the timber is turned into cash.

Systematic thinning of timber gives the forester a chance to cull out the scrub trees and make room for the good ones. This opportunity for roots and crowns to stretch results in increased growth—and more money. One study has shown that the best growth on young "old-field" pine stands can be made if about one-half the trees are thinned out. Growth amounted to slightly over a cord of wood a year on each

acre. Where more than half of the original number of trees were cut, growth decreased in proportion to the number of trees removed.

Thinning and selection cutting offers landowners excellent returns on their timber over a long period of time, Reynolds reports. It means taking a little timber every few years, as compared to taking it all at one sweep of the ax, a practice that is too commonly followed on most farm woodlands. Selective cutting studies are underway which involve repeated cuts of timber at varying intervals of one, three, six and nine years. Reynolds likes the shortest possible cutting cycle. When the owner has a fairly good stand of timber at the start, he can cut often, if he cuts wisely. When he hasn't, then he has to wait longer and cut less.

A cut-what-you-grow plan is showing surprising results on a block of timber the Crossett foresters call their "farm forestry forty". The 40 acres represent the average size of farm woodland in the region. The timber is cut every year according to sound forestry methods, with the cut equalling the amount of new growth.

In eight years, eight cuts of timber have yielded products worth \$1,277 on the stump, or an f.o.b. market value of \$4,655, the equivalent of \$3.99 and \$14.55 an acre a year, respectively. The 1945 harvest, with a market value of \$603.73 f.o.b. mill, included sawlogs, pulpwood, fuelwood and posts. Today, after eight years of cutting, there is as much pine timber as in 1937, and it is now all of excellent quality. The system shatters the old theory that timber growing and harvesting is a slow business.

"Why not farm your timber every year like other agricultural crops?" Reynolds asks. One of the axioms with Crossett foresters is, "You can have your cake and eat it too, when you cut timber selectively."

Reynolds believes that farmers and other timberland owners make their biggest mistake and take a large potential loss when they sell entire stands for pulpwood, logs, or other products as soon as the trees become of size. "One would not be likely to take money drawing 15 to 30 percent interest out of the bank and put it in a sock. Yet that is actually what a great many timberland owners do when they

**Pine reproduction following removal of hardwoods.  
A nearby market utilized most of the cull trees**





**A locally-made portable loader handles selectively-cut pine logs. Farmers are encouraged to cut their own timber and haul it to nearby forest industries, thereby increasing their profits from farm forestry**

sell entire young stands of pine to be cut clean for pulpwood or other uses," he declares.

Another idea advanced by Reynolds for increasing returns from farm woodlands is to encourage farmers to cut their own timber and haul it to nearby forest industries, or place it on a road where it can be picked up. "Farmers harvest their agricultural crops, why not their timber? Wages for timber work exceed stumpage values of the trees, ranging from as much as 35 to 60 percent. That is money that should go into the timber grower's pocket."

Studies at the Crossett Forest have also brought to light some interesting facts on the huge employment possibilities that await the South when forest management on its far-flung timberlands gets into full swing. Reynolds' figures show that woods work provides a year's employment for one man on each 150 acres of timberland under management. The work includes timber marking, cutting, skidding, loading and hauling and overhead. As the forest improves, he believes that intensive management will provide full-time woods employment for one man on every 125 acres, or woods and mill employment on every 60 acres.

One large lumber company in Arkansas with 400 thousand acres of timberland can keep an average of 1,260 men busy for the next 10 years on forest improvement and thinning work alone, in addition to its present large personnel engaged in regular harvesting and milling operations, Reynolds estimates. With well over half of the area in 11 southern states in forest land, a golden opportunity awaits the region as industries and farmers swing more and more into scientific timber management.

It is at this point that Reynolds answers the question that comes to the minds of all who visit the Crossett Experimental Forest: "How much can I make from timber growing?"

It's the "\$64 question" at Crossett and it usually comes late in the day after you have travelled miles looking at the wonderful results of man's ingenuity in guiding the work of nature into channels of productive timber growth. The rays of the late afternoon sun are slanting down through the tall pines that reach their needled crowns high into the sky. Clean, straight orange-brown tree trunks sway gently among the little pines which are springing up everywhere.

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# Britain Replants



By ARTHUR NETTLETON

**A**LL over the United Kingdom, from the English Channel Coast to the Scottish Highlands, new forests are appearing. In East Anglia has been established Thetford Chase, a new timber-producing region of 52,000 acres. In Northumberland an even bigger project is nearing completion, and similar enterprises are being promoted in other parts of the British Isles.

The projects are part of the government's plan to make Great Britain as self-supporting as possible, so far as

timber supplies are concerned. The long-term program aims at afforesting no less than five million acres, and a grant of £20,000,000 (approximately \$100,000,000) was made by the British Parliament last November to cover the cost of the undertaking for the next five years.

During that period, 365 thousand acres are to be planted. With an ever-increasing step-up of the scheme, it is expected that nearly one-tenth of the United Kingdom will be producing

timber of one kind or another 50 years hence.

Such an enterprise has already created a demand for millions of seedlings, and tree nurseries are being developed as quickly as possible to meet this expanding requirement. Britain's biggest forest nursery is in South Wales, overlooking the Bristol Channel. Other nurseries are flourishing or being established in different parts of the country, including North Yorkshire and the Lake District.

Nine-tenths of the timber felled during the war is being replaced from these sources; only one-tenth is being restored by natural regeneration. The





Tair Onen tree nursery, near Cardiff, now has more than 35 million seedlings in course of rearing, and today the stock of young trees ready for transplanting reaches nearly five million. In all Britain's nurseries together, 250 million seedlings are being reared, and 70 million transplants are available for rebuilding denuded woodlands or starting new forests.

Conifers predominate in the nurseries, since the British policy in general is to build up the timber resources with the minimum delay. First, pines and spruce trees are the species most widely reared. Cedars and other varieties of conifers are being grown, however, and Britain's long-term policy also takes account of slow-growing hardwoods such as oak and ash. The beech, too, figures fairly prominently in the nurseries.

Though the predominance of firs and pines in the new forests has caused some misgivings on the part of the public (who have declared that these trees are foreign to the English scene), the nurseries are actually providing more than 30 different species of trees.

Some of those indigenous to Britain are being reared not only for timber purposes, but also partly to meet public criticism. Oaks and beeches, for instance, are being transplanted from the nurseries to form a fringe round plantations of firs and pines. In this way the effect of the "foreign" trees upon the English landscape is being minimized.

Various methods have been adopted to provide the nurseries with seeds. Existing forests are partly meeting the demand. Fir cones, for example, are collected from felled trees, and the seeds extracted. Tons of acorns have been gathered for use in the same way.

But much larger quantities of seeds are being imported, particularly from Canada and the United States. Canada alone has sent to Britain sufficient seeds for more than three million Douglasfirs. The seed extraction plant at New Westminster, British Columbia, is dispatching increasing weights to the United Kingdom.

In addition to rearing Douglasfirs from imported seeds, Britain's forest nurseries are raising from American and Canadian seeds hundreds of thousands of western redcedar, western pines, and Sitka spruce trees.

Yet the nursery workers have called for still greater quantities. Liberated Europe—notably Corsica and Norway—is helping to meet the demand. Emissaries of Britain's Forestry Commission went to those parts of Europe immediately after the territories were freed from the invaders, in order to ensure that the tree nurseries of the United Kingdom would have enough seeds.

Research into the problems confronting nursery work has also been intensified. Beginning as a small research branch of the Forestry Commission several years ago, there is now a much larger enterprise known

as the Forest Products Research Laboratory. Operating as part of the government's Department of Scientific and Industrial Research, it has supplied much valuable data and information about the rearing of seedlings.

Indeed, largely as a result of experimental work in the nurseries, Britain is now able to grow certain softwoods in a greater volume per acre than Sweden and Finland! Laboratory workers, in cooperation with the nurserymen, have also obtained data which is being used to decrease greatly the mortality rate among young trees.

Close attention has been given to the influence of the time of planting. Other investigations have been concerned with the methods of storing the seeds before they are actually planted in the nurseries. Most conifer seeds used in Britain are stored dry, but are soaked in water for 24 hours before being sown.

The main planting season is from February to April, though a few varieties are sown earlier. Among the latter is Douglasfir, the seeds of which may be planted in the nurseries in January or even December. Ash seeds, say the British forestry scientists, may be planted as soon as they are collected, or they may be stored for one or two seasons before they are used.

Despite the apparent hardness of the oak, this tree requires special care

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**All over the United Kingdom, from the Channel to the Scottish Highlands, new forests are appearing—this one is at Grisedale Pike**





# MARY'S SON'S

*By*

CHARLES ELLIOTT

Everything about the bob-white quail, No. 1 game bird of the East, is royal. Here is the story of a program that is building public sentiment for his protection

IT has been said that the sons of Mary "wear the purple," but Ed Pomeroy will not admit that he named his prize hen quail "Mary" because the sons and daughters she presents to the world of guns and dogs and sedge fields are blessed with royal sporting blood.

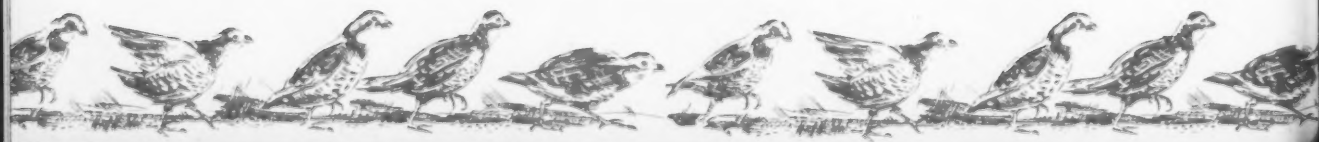
Mary is a resident of the Georgia quail farm. As with all other good war and postwar workers, her place of abode was sometimes shifted suddenly. Last March she was removed from a group of holding pens which housed her and 349 of her sisters and cousins. These young matrimonial candidates were mated with cock birds and each pair assigned to a separate laying pen at the game farm.

All but 28 pairs went immediately about the business of raising families. Pomeroy swapped the male birds around in the 28 pens several times trying to mate the reluctant hens. Finally only one little hen in all the game farm stuck by her virgin guns. That was Mary.

Within a period of three weeks, eleven cocks were released in Mary's pen, but Prince Charming was not among them. Each time a shy male was handed into her pen, she circled him warily, then suddenly attacked with all the fury which made Kipling declare the female of the species more deadly than the male, and the poor, frustrated cocks were removed more dead than alive.

Mary accepted the eleventh mate. Whether she took him into her house and heart with a sense of resignation, no one will ever know. I doubt it, but she settled down then to raising a family in the most prolific way. During the season, Mary produced more eggs than any hen at the game farm. Her total was 137, twice as many as some of her more complacent sisters.

Strangely enough, the egg and chick production of the Georgia Game and Fish Commission is not devoted directly to increasing the quail population of the state by releasing them into the woods and fields. Experiments in recent years



have shown that not more than two or three percent of the quail raised on wire and turned into the wild survive. The hot-house birds simply cannot cope with their natural enemies or find enough food for survival. From mash feed and the protection of wire pens from rats, hawks, dogs and cats to raw wilderness is too great a jump. The commission, therefore, has made other plans for its quail farm production.

Only enough birds are raised to maturity to maintain healthy stock at the game farm. The remainder of the eggs and chicks, between 20,000 and 25,000 each year, is parceled out among farm boys and girls.

These young rural citizens have an organization known as the Georgia Junior Wildlife Rangers. Last year more than 50,000 of them signed pledge cards, on which they promised:

- To obey the game laws of the state;
- Protect both song birds and game birds;
- Encourage school mates to help wildlife;
- Discourage destruction of birds' nests;
- Help stop harmful forest fires; and
- Teach and practice conservation at all times.

More than 12,000 of the organization members had wildlife projects on their farms. These projects consisted of mapping the farm to show quail coveys, fox dens, den trees, and other wildlife habitat; the construction and management of farm ponds; and protection of wildlife from illegal hunting and fishing.

The release of quail eggs and chicks to the Junior Rangers did not materially increase hunting, but it aroused enough interest in the communities to protect the birds and other game already there.

Give a group of budding hunters 15 quail eggs to set under a bantam hen. In three weeks the chicks hatch out,—10 or 12 of them, maybe more. They are no larger than the end of your thumb, but within a few hours after they come out of the shell, they

are scurrying around with all the vitality of youth, scratching for themselves. The little brown balls of fluff are as independent as they'll ever be.

The bantam-mothered covey is raised in the backyard of the school. Watched over and handled by the

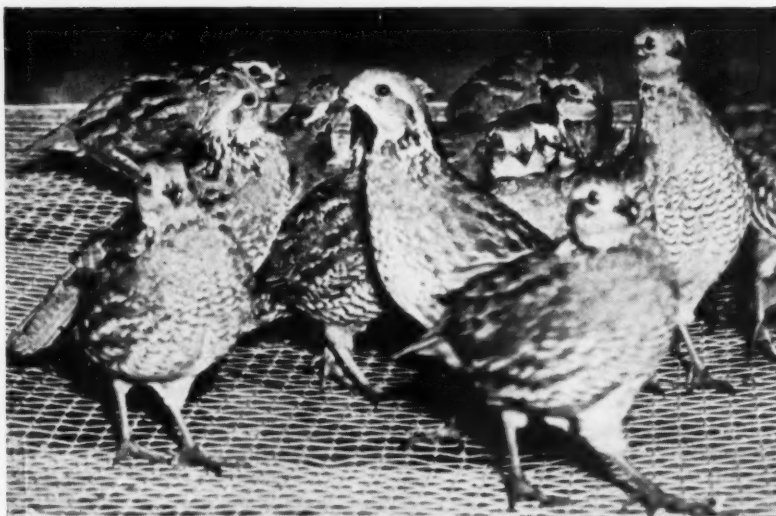
Junior Rangers, it is released in a field or protected strip of woods behind the school.

Whether or not they survive makes little difference. Every quail in the county is a potential member of that school covey, and the foundation that builds toward better understand-

**Thousands of chicks raised at the Georgia quail farm are parceled out to farm boys and girls who have developed wildlife projects**







**Experiments in Georgia have shown that not more than three percent of bob-white quail raised on wire survive when turned into the wild**

ing and appreciation of the game resources is strengthened.

The tiny bob-white has all the qualifications to make him the No. 1 game bird of the nation. He is a sportsman from the tip of his brown wing feather to his bright black eye. The explosion of a covey out of the sedge patch is one of the most dramatic experiences any hunter can have.

Being smart, as well as fast on the wing, has carried Bob and his family through a good many years of pot hunting, trapping, and illegal shooting in the South. Increasing public sentiment for his protection has brought many southern game departments out of the dark days of political control and made them into service organizations, founded and maintained on a merit basis.

The Georgia Game and Fish Commission is typical of this growing sentiment for better game departments. Created by an Act of the State Legislature in 1911, for almost a third of a century the game department was kicked around by various governors and legislatures. It was placed under commissions, shifted from one department to another, man-handled by the politicians. Each new administration swapped its ends completely and personnel changes due to politics were the rule rather than the exception.

In 1943, the State Legislature passed a resolution to allow the citizens of Georgia to vote the department out from under political control, and the department was set up in an amendment to the State Constitution.

Under the constitutional provision, 11 commissioners, one from each

congressional district and one from the coastal counties, were placed in complete control of the game and fish department. They were delegated authority to select department personnel from the executive director on down through the organization, to promulgate rules and regulations for the protection and welfare of game and fish, and to run the department without benefit of political control.

Most of the other states of the South now have similar organizations, and the business of hunting and fishing is on the upswing.

One example of how bob-white comes in for his share of this new management of game resources is the cooperation of the Game and Fish Commission with soil conservation districts. Last year the commission handed out to the farmers some 22,000 pounds of *Lespedeza sericea* and *bicolor* seed to be planted in field corners, along fence rows and as field borders.

This new source of food, added to the already naturally abundant wild quail food in the South, should assure the quail families a very sumptuous living.

Ask the average man in the street how many quail can live on an acre of land. He will think back to some of those exploding quail coveys and probably guess any number from 10 to 30. The truth is that you are more apt to find one quail on each 30 acres.

Herbert Stoddard, world authority on quail, says that the saturation point of quail on large tracts is one bob-white to the acre. And this is so only when the "varmint" or pred-

ators are kept under close control and when sufficient food and cover are available. Only a few of the large plantations from the Carolinas to Arkansas, where quail meat comes high by the pound, have ever reached this saturation point.

The plantations are only one phase of the huge business which has grown up around the heads and shoulders of Mary's feathered sons. Before the war, many wealthy sportsmen purchased and developed these large plantations in the South, primarily for quail shooting. During the last few years, however, most of these agricultural factories went on a war basis to turn necessary timber, livestock and agricultural products into the channel which led to victory and peace. Now that the war is over, they are converting again to havens of relaxation from the slam-bang of the industrial world, and the bob-white will again take its rightful place as a dominant crop.

But the industry is bigger than that. Each fall and winter an army of sportsmen, some two million strong, march into the field to match their wits and the wits of their favorite pointers and setters against old Bob's sagacity. Those two million men and boys and women must have boots, suitable clothes, guns, ammunition, gasoline, food, and other essentials that cost money. Each year several millions of dollars are swapped over Bob's head.

In spite of his royal blood, bob-white is only a small bird of approximately six ounces, wrapped up in a brown feathered coat. This coat, supplied by a wise and provident Creator, is his best protection against enemies of the wild. Bob can settle in the sedge or flatten himself against the ground and grow invisible almost under your very eyes. Look for him in front of your pointing dogs next fall. Ninety-nine times out of a hundred you'll never see him until he explodes in your face and takes off like a startled brown ghost for the protection of the nearest swamp or pine thicket.

The sun is near the uneven fringe of pines in the flat, so stop and count your bag. Your dogs are tired. They lie down at your feet, knowing that in a moment you'll thank them with a pat for a day's work well done. Your own muscles are tired too, but in your heart and spirit there is an exhilaration that only such a day can give.

As you walk up the hill toward home, you feel that you are immeasurably better for that day out-of-doors with the royal sons of Mary.



# TROUT WATERS PISGAH STYLE

By DON CARPENTER

## A novel and successful experiment in keeping public fishing waters productive

**A**N experiment in trout fishing betterment has proved highly successful in the Pisgah National Forest of North Carolina. A cooperative effort in which the U. S. Forest Service, the Fish and Wildlife Service and the North Carolina Department of Conservation and Development joined forces—this project to create a trout fisherman's paradise has been underway now for seven years.

Basically, the Pisgah plan rests on these points: Suitable water with sufficient natural food for trout; stocking and closing until fish reach maturity; a census of all fish stocked and caught; systematic replacement of the angler take; adequate stream patrol and a special permit for each day's fishing; rotation of stream openings so that each one can be rested at least three days; and con-

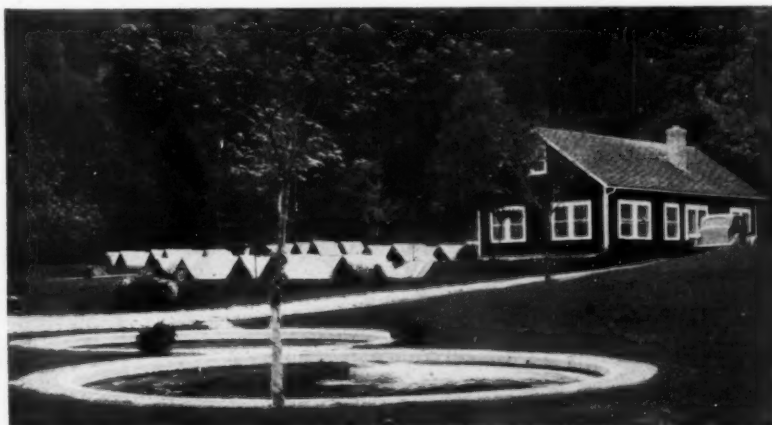
servative size and bag limits.

As a result of this program, Pisgah streams are now well stocked with brook, brown and rainbow trout, some weighing up to four pounds. The main trout waters involved in this experiment are the Davidson, North Mills and South Mills rivers, all easily accessible from the town of Brevard, in the western part of the state.

Only one stream in this area is opened at a time and the fisherman who headquarters at Brevard can angle new water every day he goes out by purchasing a special permit, costing one dollar. This is in addition to his state fishing license, of course.

At all approaches to the streams are checking stations where State Game Department men check licenses and sell special permits. On leaving the area the angler checks his catch with these state men who count, measure, weigh and make a record of each fish. This information is used in the determination of rate of growth

**The Davidson River Hatchery where most of the trout planted in the Pisgah streams are raised from fingerling to legal size**



**A trout fisherman's paradise  
—the Pisgah's Davidson River**

of the fish in each stream and the amount of stocking necessary at the close of each season. When the program was inaugurated, a system of fish brands was employed for the purpose of identification. This practice was considered no longer necessary several years ago, however, and discontinued.

All of this adds up to real sport for those who want to fish for fun and are satisfied with a moderate bag limit. It doubtless is the answer to how trout fishing on public waters can be perpetuated—a pertinent question now that more than seven million licenses are sold each year and good roads make most any stream accessible. In addition, it means a longer open season for the fly casters who like late summer angling. Last, but far from least, the average size of trout can be larger than those now caught.

"Most of the fish planted in the Pisgah streams are raised from fingerling to legal size in the Davidson River hatchery," according to Carl

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# SAGA OF MCCLEARY

By CHAPIN COLLINS

FIFTY years in the logging business on the West Coast is a long time. That goes back almost to the very beginning of things, lumberwise, in that region where tall trees have attended the birth of tall tales of the woods.

The Simpson Logging Company of Shelton, Washington, has just turned the half-century mark. To the loggers who drove the bull teams down skid roads only a few decades ago, the company's plans might sound taller than the wildest yarns yet woven about fabulous Paul Bunyan. For, instead of looking back to its 50 palmiest years of harvesting some of the finest and largest timber this continent has grown, the company is looking *forward* to even more palmy years in which new growth will play an ever more vital role.

What the Simpson Industries' plans mean to its expanding community are succinctly illustrated by the experience of a town that once felt itself doomed as the giant Douglasfirs surrounding it became fewer and fewer. The town is McCleary. Today, with its eyes on new trees growing where the virgin stands were cut, McCleary is convinced that its history is not a closing book, but rather a chronicle yet to be written.

It was more than 50 years ago that Henry McCleary began to log in that area and founded the company town which was given his name.

It was in the '80s that young McCleary walked into those lush forests

with all his possessions in the pack on his back. In the brawling days of western logging, he wrested from those great logs one of the large timber fortunes. Some men considered him "tough," but "rugged" described him better.

There's a story, likely apocryphal, that when Henry McCleary decided to build a large plywood plant and door factory, he first selected the little farming town of Elma, in the same Grays Harbor County. But the Elma Chamber of Commerce, in a remarkable reversal of chamber of commerce tradition, balked. This trading center for neighboring dairymen looked askance at an industrial population.

Whatever the reason, McCleary built his own town nearby in a forested, bowl-shaped valley. At its peak, McCleary sent a million doors a year throughout the world.

It was his own town in every sense of the word. His company owned the mills, of course, and forests. It also owned the buildings, homes, streets, sidewalks and light poles. It didn't own the town government. It *was* the town government. Legally, McCleary wasn't a town at all.

As company towns went, McCleary had many advantages. The McClearys themselves bore little resemblance to "soulless corporations" so often blamed for evils associated with such communities. Their principality was a "Henry", "Jim" and "Charlie" sort of place. A shining fact in an area then heavily burdened with unemployed was McCleary's depression record. Its mills kept running. Very largely, the town took care of its own, without aid of WPA.

But McCleary's doom was written in stumps specking the barren hills like headstones in a cemetery. The Black Hills, they had been named, originally, because of the dark green of fog-shrouded firs thicker than hair on a dog's back. They became blacker as fire-charred remnants of logging waste.

Storekeepers, sunning themselves on the wooden sidewalks or crossing the main drag—which was the highway—for a friendly glass on a hot afternoon, watched the fringe of Douglasfirs recede until there was none to be seen at all. They kept their shops open with fingers crossed. Some, anticipating the day when the last tree would be cut, hung up

McCleary's doom was written in stumps specking the barren hills like headstones in a cemetery; but new and permanent life came with forest management





"CLOSING OUT SALE" signs and moved to greener fields.

One day, the town's fire bell clanged a knell as one of the plants went up in flames. It was only partly rebuilt, in patchwork fashion. Henry McCleary hadn't long to live. Timber was playing out. The movie boarded up its entrance. The end seemed near, indeed.

It was more than a surprise to the whole country when, in 1940, the entire town—factories, houses and all—was bought by the Simpson Logging Company, which had operated out of the neighboring town of Shelton for 45 years.

This purchase, contrary to some opinion, was not a junking venture, as McCleary's residents learned when the new owner started to modernize its newly acquired plants.

Actually, this decision resulted from a simple botanical fact, often seen but less understood: Trees grow. In earlier years, Simpson's in common with other loggers of the time, "mined" timber against ultimate exhaustion. But, as fallers and buckers penetrated deeper into the Olympic foothills, they crossed lands logged 25 to 50 years before which now were becoming jungles of new growth. Foresters began to study these ubiquitous young trees. They drew charts and made graphs. They all but ran out of colors showing condition of timber—new and old—on their maps.

Finally, they understood the silent story nature was trying to tell: "You needn't cut your last trees, because I'll replace them if you'll help."

So they took 115 thousand acres of their own lands, enlisted the help of some neighbors and, together, the group set up what they called the South Olympic Tree Farm, some 250 thousand acres cooperatively protected and managed. With the end of the war, plans for road construction and other fire prevention procedures can be brought more rapidly to actuality.

Simpsons had discovered other forest facts, too. Originally, as loggers only, they dumped logs into Puget Sound to be peddled to saltwater sawmills. They cut 180 million board feet a year to keep 600 men busy. Now, although cutting less timber they employ 1,400.

Their own records explain this paradox. Logging 1,000 board feet took less than five man-hours on the average. To saw 1,000 board feet into lumber required 8.67 man-hours more. To convert it into pulp, the raw material of rayon and cellulose

as well as of paper, Shelton's pulp mill used more than 15 man-hours. Making plywood upped this to 26.5 man-hours.

The acquisition of McCleary, then, was a logical sequence in the process of getting more from 1,000 board feet of wood.

"We're dealing in one certainty," declared Chris Kreienbaum, the company's general manager. "That is the capacity of trees to grow. An acre of fairly good forest land can produce 42,000 board feet of Douglasfir in 100 years, starting with good, year-old reproduction.

"But there are many uncertainties. I would put fire first, for we have seen fire wipe out the highest hopes."

With such reservations, the company considers itself on a sustained yield basis, which means tributary forests are producing as much wood as it is using. It is not the first forest operator to achieve this with respect to lumber and pulpwood. But it believes it can say the same for plywood peeler logs, a statement astounding to those in the industry. Plywood uses big logs, four feet through or larger. They don't grow in a few decades.

But the maps and charts show how this can be true. First, there's an existing 70-year reserve of plywood trees. Then there are graphs which show how rapidly the Wynooche Ox Bow country is being restocked, how the wide swath cut by the "Big Burn of 1902" is being reforested, how other logged areas are growing a new generation of trees. Together, they point to the possibility of a 100-year harvest cycle for plywood.

That's on the long end of "integrated utilization." At the opposite end, trees only 20 or 25 years old may find their way to the pulp mill or to chemical plants.

Even 100 years won't grow trees as large as many of today's peelers, but techniques haven't stood still, either. Lathes are able to take smaller logs. Prolific hemlock, once ignored as a weed of the woods, is proving its mettle in plywood panels as fine for certain purposes as standard Douglasfir.

McCleary's business men, hearing their new industrial friends discussing production prospects for the year 1994 as a farmer might next season's

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**New methods of manufacture now enable McCleary's mill to utilize more of each log, such as these Douglasfir "peelers," for plywood. Smaller logs and hemlock, once ignored as a weed of the woods, are also being made into plywood. Thus the company hopes to maintain production**





National conference set for October 9, 10 and 11

**T**HE American Forest Congress, called by The American Forestry Association to formulate postwar conservation programs, will be held on October 9, 10 and 11 at Washington, D. C.

As previously announced, the purpose of the Congress is to bring together representatives from all segments of industry, agriculture and the public for joint consideration of the postwar forest situation and to formulate action programs shown to be urgent if the nation's sources of lumber, pulpwood and other forest products are to be maintained and developed on a scale adequate to the country's future requirements.

The Congress will have the benefit of down-to-date facts concerning the nation's forest resources after three years of war. The Association's Forest Resource Appraisal will be completed by July and results will be available shortly thereafter. This nationwide inventory, in process for more than two years, is being made with the cooperation of state departments of forestry, the U. S. Forest Service and other public and private agencies. Its findings, therefore, will give the Congress a factual picture of prevailing conditions, essential to the formulation of any action program to speed up timber growing throughout the country.

"Our fact-finding work during the past two years," says W. S. Rosecrans, president of the Association, "has brought us into contact with virtually every phase of American life and industry. Almost without exception we have found an alert consciousness on the part of people everywhere that swifter progress must be made in rehabilitating and increasing the productivity of millions of acres of forest land, which constitute one-third of the land area of the United States. We have found, too, a widespread desire on the part of conservation agencies—federal, state and private—to unite in a commonly accepted program of 'must' accomplishments. The American Forest Congress in October will provide the opportunity to mould that urgently needed unity of effort."

The U. S. Chamber of Commerce building in Washington where the American Forest Congress will meet





**1** Sam Miller, the inventor, loads the planting tool



**2** A step on the foot rest sinks the sharply-pointed blade in the earth



**3** Handle grip is compressed, shoving tree into the soil

**F**ORESTERS and loggers in the Pacific Northwest are watching with unusual interest experiments being concluded by a young Oregon State Forestry Department land expert, Sam Miller. For Miller has developed a little spade-like tool, costing just \$20 to manufacture, which may well change the approach to reforestation in the Pacific Northwest. With the aid of this tree planter, a workman can plant more than twice as many seedling trees on burned or denuded areas than by the slower and more costly hand method.

In the winter of 1943, Miller and a fellow state employee, Lou Amort, were put in charge of a group of convicts on a tree-planting project in the mountains of the Coast range. Bucking snow and rain and rugged terrain, Miller, after several days' hard work trying to make tree planters out of willing but green men, was struck by the slow pace a man could

make while stooping and setting each tree by hand, after digging a hole with a hazel hoe or hodag.

"There must be a faster and cheaper way to plant trees," Miller said to Amort one evening. "We should be able to mechanize tree planting just as wheels and levers and gears have been put to work at so many other tasks."

Amort, a good mechanic, who works in the state shops most of the year, caught the spirit of his friend's challenge.

"Sam, you've hit on something," he exclaimed. "You know what's needed, so why don't you design a tool. I'll make it for you in the shop."

The next morning, after hours of study and work, Sam Miller came up with a crude, cardboard model of a tree-planting tool. He took the model to his boss, State Forester Nelson Rogers, and this practical man, seeing at once the prospects and pos-

sibilities, authorized Miller and Amort to make up a working model in the state shops.

Today, the Miller tree planter, developed and improved during three years of experimenting, bids fair to revolutionize the entire approach to reforesting old burns and other non-restocked areas in the Northwest.

"We can double the number of trees a man can plant in a day," says Miller. But he is overly modest in his claim. The average number of trees a trained man or full-grown boy will plant by hand, with a hazel hoe or hodag, is about 500 a day—some will make 600.

Fourteen hundred seedlings can be planted each day by one man with the Miller tree planter. This is the extremely conservative claim of inventor Miller, who points out that an ordinary workman should average 200 trees an hour. He says that seven hours' work a day is about all you can expect, which totals 1,400 trees,

# TREE PLANTER



By ARTHUR W. PRIAULX





**4** A quick jab of the blade fills the hole beside the tree roots



**5** A vigorous stomp of the heel packs the earth tightly around the roots



**6** Over 95 percent survival resulted in this planting

or two and one-half times the highest average of the hand planter, using a hoe. But Miller goes on to point out that with no particular training he averaged 240 trees an hour when he was trying out his planter.

The key to this new tool is simplicity. When Lou Amort got through making the first rough working model back in 1943, Miller started planning ways to improve it, to reduce the number of working parts, to lighten it for ease of carrying and handling in the woods, and to increase its efficiency. Four times he has had mechanics manufacture improved designs. The latest one, a streamlined number that compares with the first (1943) Miller planter as the modern automobile compares with something out of the dim past, has just been manufactured in Salem.

This newest planter is an all-steel device that looks very much like a spade with the blade compressed to a single inch-by-two-inch square fin-

ger, and with one foot rest eliminated. Smooth working, trouble free, and fool-proof, as this writer, who worked the tool with no trouble and little effort, can testify, it looks very much as though it will replace the former crude hand-planting methods.

There are only three moving parts in this tree planter. In the spade-like grip is a trigger-handle, concealed inside the grip so that it will not catch on brush while the operator is traveling. A toggle arrangement, tripped by a spring inside the hollow handle, operates a kick-out bar. That completes the mechanical contrivances in this simple little gadget.

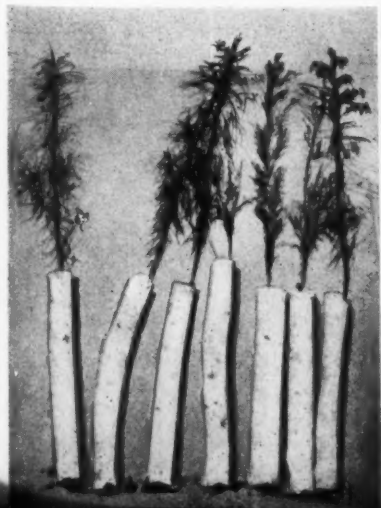
In the field the actual operation of the planting tool is even simpler than a description of its moving parts. The planter carries his seedlings under his arm in a specially designed square box. Ready for action, he picks a seedling from his box, places the roots snugly into a small slot in the blade and steps on the foot rest.

**With this newly developed tool, tree planting becomes a speedy, inexpensive procedure**

This drives the blade, which is eight inches long and sharply pointed, into the earth up to the foot rest. Then the operator tips the tool back away from the tiny seedling, compresses the trigger grip which ejects the tree from the slot, and pulls out the tool. A quick jab with the blade fills the hole left alongside the seedling's roots, and a vigorous tromp by the operator with his heel completes the job. Test the seedling and you will find it is firmly set.

Some of the preliminary test planting undertaken by Miller on state for-  
(Continued on page 138)

**Wrapped in moss and paper the seedlings carry their own K-rations**



**The inventor explains the features of the tree planter to Dr. Walter Holzer and Forester Axel Brandstrom of the Crown Zellerbach Corporation**





# OREGON'S UNEQUALED FOREST CAPITAL

By JOHN B. WOODS



**This article previews the findings in Oregon of the Forest Resource Appraisal of The American Forestry Association. Iowa will be similarly presented in the April issue.**

OREGON trees grow big and they live long. Among the Douglasfirs, cedars, Sitka spruces and ponderosa pines, 400 to 500 year old veterans are commonplace. Yet the forests of which they are part must be regarded as relatively young. Probably not more than 50 centuries have passed since the ice-cap melted away from this northern coast and permitted two dozen kinds of conifers and half as many broad-leaf species to creep back northward and become firmly established along the Pacific Slope.

It is well known that these present-day forests are the result of plentiful moisture working upon rich soils; soils derived, for the most part, from mineral-strong basalt rock, split and ground fine by frost and friction, enriched further with remains of decayed plants. In general, it may be said that the biggest trees are to be found in greatest numbers where soils and moisture are most favorable. Yet, since trees will grow in almost all of the soils occurring within the state, moisture actually is the limiting factor. From nearly 200 inches of annual precipitation down to slightly less than 20, tree-growth is supported; below that range, brush, grasses and hardy weeds take over the land.

When white immigrants entered Oregon from the upper Snake River valley a century ago, they toiled up hill and then down, through a region of pine-covered mountains. After 100 miles or so, they left the timber and traveled across sharply-shelving grassy plateaus to the Columbia River, and then along beside it. Here, for 100 miles, their route was treeless; then, forest growth again appeared, yellow pine, as in the northeastern highlands. Beyond the Dalles, the rocky narrows of the Columbia, these westward-pushing pioneers traveled in timber however far they went, or by whatever land route.

New kinds of trees were seen, dense west-side jungles re-

placed the park-like groves of the eastern slopes. Even if they chose to float upon the broad river all the way down to the sea, their nightly camps were pitched under giant firs and spruces.

The youthful poet, Bryant, back in the Massachusetts Berkshires, sang with apt suggestiveness, "Or lose thyself in the continuous woods, where rolls the Oregon. . . ." When he wrote, in 1815, these woods actually were continuous. They are nearly so today, and in their dark fastnesses a number of people lose themselves, quite literally, every year.

Distribution of Oregon's forests can best be explained in terms of topography and geographic position. The state is a rough rectangle, extending eastward from the Pacific shore nearly 400 miles, and southward from the Columbia River three-fourths as far. Along the western side is a belt of rough mountains. In the north this Coast Range, 20 to 60 miles wide, rises to 3,000 feet. Southwestern Oregon is entirely filled with a jumbled highland, about ninety miles square. The principal peaks of these Klamath Mountains approach 8,000 feet in elevation.

**Larvae of dendroctonus beetles are destroyed while hibernating in bark—here being stripped—of pines**





**Logging with crawler type machines permits tree selection in Oregon's Douglasfir forests**

Approximately 100 miles from the coast, the Cascade Range lifts its rocky spine 6,000 to 7,000 feet, and thrusts numerous volcanic cones and remnants of ancient craters still higher. From the Columbia plain, midway between the ocean and the Cascade ridge, the Willamette River Valley reaches southward for 125 miles. Varying in width from less than 10 to more than 30 miles, this alluvial flat is traversed by the deep, curving Willamette and numerous feeder streams and sloughs.

Beyond the Cascades lies the great central plateau, commonly known as eastern Oregon, deeply cut, in spots, by swift-flowing rivers, but here and there marked by an utter lack of exterior drainage. To northward, is the region of the relatively high Blue and Wallowa mountains, and beyond, the Snake River rushes through its deep canyon. Upon the arid stretches of southeastern Oregon are occasional tree-clad ridges, extending roughly north-south, like the fingers of a giant's hands.

Only two Oregon streams bring water to the Pacific from east of the Cascades. The Columbia issues from a cut through the mountains at the state's northern border, while the Klamath River skirts the southeastern end of this same range, before crossing into California on its turbulent way to the sea.

In the state there are many climatic variations. Generally, however, it can be said that the eastern section is semi-arid, while the western part has a humid, or marine climate. During most of the year, moisture-bearing winds blow from the Pacific Ocean, eastward across the coastline of North America. It is sometimes alleged that our West Coast weather is made in Japan, since many of our storms originate in the vicinity of those islands. That winds travel all the way across the Pacific was dramatically shown during the war by the arrival at various spots in the coast region of ingeniously rigged paper balloons, which were known to have been launched in Japan. Their effectiveness as incendiary or lethal devices was negligible, for several reasons, yet those which did arrive came upon the very winds that bring life-giving moisture to our western people.

The coast of Oregon is within the range of heavy concentration of such moisture-bearing winds. Reaching the Coast Range, these air currents are forced upward and cooled rapidly. In spring and autumn, this means rain; in winter, it spells snow, at least upon the higher elevations; and, even in summer, the result is frequently fog. Heavy precipitation prevails from the sea to the higher eastern slopes of the Coast Range.

Across the long and narrow Willamette Valley, the earth usually is warmer and precipitation is less, yet when these eastward-moving winds strike the high, cold Cascade ridges, a great deal of moisture is lost. Over interior Oregon, these air currents are able to retain most of their remaining water vapor, except as they encounter more highlands near the Idaho line. It should be noted, however, that, in summer, when the earth is everywhere warmer, rainfall is scanty, while in winter rain and snow are distributed generally, although in varying volume.

Along the coast of Oregon, we find the nearest approach to rain forests: dense jungles of Sitka spruce, hemlock and Douglasfir, with maple and red alder along the streams and a wealth of vines and bushes underneath. Back from the sea, to an elevation of 2,000 feet, or more, Douglasfir predominates, with redcedar and hemlock constituting the understory. Other true firs occur scatteringly from sea level up to the very summit of the Cascade Range, there being close affinity between the various species and certain altitude ranges.

From the Cascade summits eastward, the park-like ponderosa pine forest appears, yielding to white fir, lodgepole and western white pine on more exacting sites. Western larch also appears in the northern area. Such species are common, as well, to the northeastern highlands, and upon the ridges which stick up from the southern desert. Near the California line, incense cedar and sugar pine are found.

Southwestern Oregon, high and mountainous, presents unique forest environments. Along the coast, Port Orford cedar mixes with the other coast species. Even a few redwoods appear near the southern border. Upon the moun-



tains are Douglasfir, ponderosa pine, various oaks and, on certain high spots, wonderful assortments of exotic species from all western North America. This area receives less rainfall than those along the coast farther north, and enjoys more sunny weather.

As has been noted, practically all of western Oregon, from the eastern Cascade slopes to the sea, was once a continuous forest, predominantly coniferous and varying only as to species mixtures, size of trees and density of stand. Including eastern highlands, the total forest area must have been about 33 million acres. Today, after slightly more than a century of white settlement the overall forest area is estimated at 29,107,740 acres.

In general, this woodland may be described as of two major types: that having western yellow (ponderosa) pine as the most important component of the stand, and that having Douglasfir prominently represented. It is interesting to note that the pine region accounts for 48 percent of the forest area, while the Douglasfir region includes 52 percent, if we include Sitka spruce, hemlock and cedar stands with it.

Real settlement began here about 1830, when several superannuated employees of the Hudson Bay Company left the post on the north bank of the Columbia and travelled up the

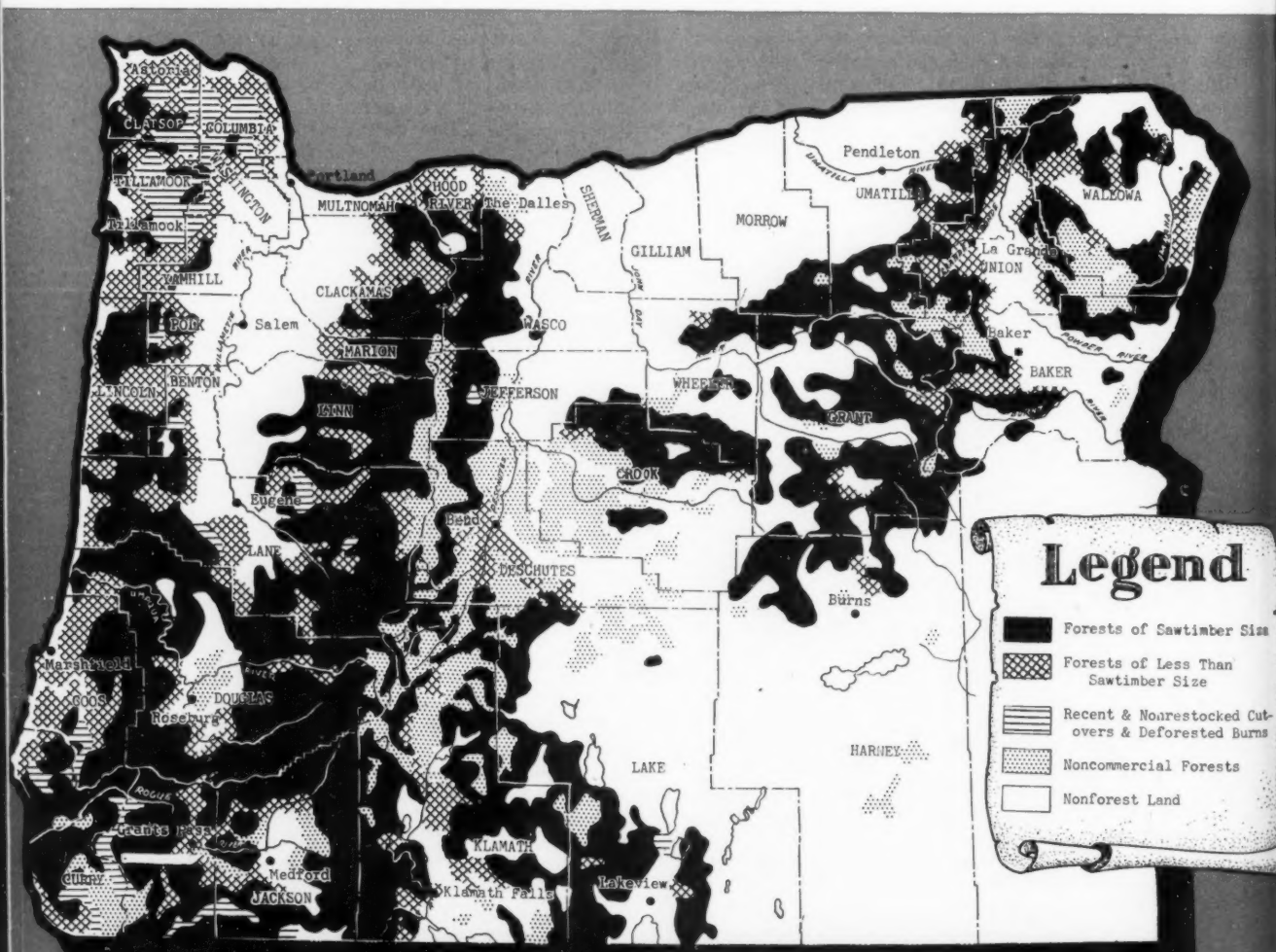


Willamette to the prairie which lay within that river's great bend, across from where the city of Newberg now stands. Although the absence of great trees was an incentive to settlement at that spot, other land-hungry people were soon to begin carving farms out of the dense forest which nearly filled the valley floor of this and other streams. Since that time, three million acres of west-side jungles have been cleared of their timber and converted into cropland and open pasture.

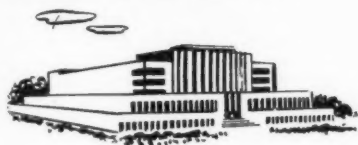
Although agriculture became and remained the chief basic industry, conversion of trees into useful products began early and eventually succeeded to second place in the state's economy. The construction needs of early settlers made but slight use of the forest giants they hacked and burned to clear land for the plow. Yet, providentially, accessible foreign markets opened for wood as they did for flour from the new wheat fields. Gold-crazy California, the teeming Hawaiian Islands, even far away China, Europe and our own Atlantic Coast, hankered for timbers or boards, pipe staves or spars, and such items went out to them in the ships that carried furs, smoked fish and wheat.

The honor of possessing the first sawmill in the Pacific  
(Turn to page 128)

Map showing generalized forest types was prepared by the Pacific Northwest Forest and Range Experiment Station

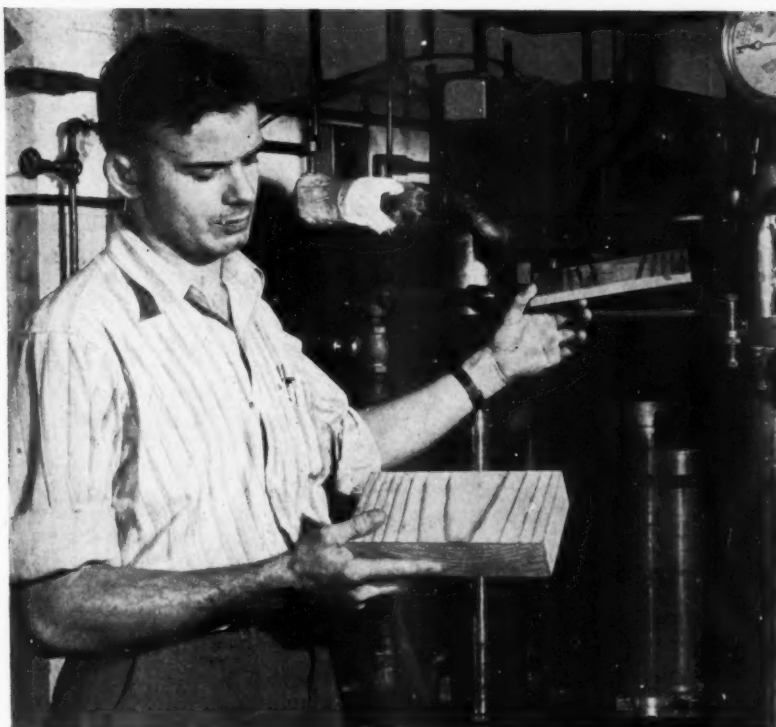


# HOUSE OF WOOD MAGIC



PART THREE

By ERLE KAUFFMAN



Specimen of staypak, heat stabilized wood, being removed from press was compressed from block similar to one held by operator

**C**OMPREG, perhaps the best known of the modified woods developed by the U. S. Forest Products Laboratory at Madison, Wisconsin, played an important part during the war in solving Army and Navy problems in design and construction of wood aircraft. Millions of dollars went into its production, largely in the form of highly compressed panels for the manufacture of propellers.

Had the war been prolonged another year, however, a new type of compressed wood, called staypak, unquestionably would have played an even more important role. Differing from compreg in that it does not require impregnation with synthetic resins, this new modified wood, still in the developmental stage when Japan surrendered, is twice as tough and has higher tensile and flexural properties. And, unlike ordinary compressed wood, it will not lose its compression under swelling conditions. Nor is it brittle like compreg; it is, however, less water resistant.

A brief history of what has been achieved at Madison with improved woods and wood-base materials seems in order at this point so that the reader may more readily understand the processes and techniques developed in this fascinating field of research. In the words of Dr. A. J. Stamm, who has guided the laboratory's program from its inception:

"Wood swells and shrinks and as a result is subject to checking and warping. Our objective has been to minimize this shortcoming. We have gone far in dimensionally stabilizing veneer and short lengths of solid wood, but the problem has not been solved from the standpoint of treating lumber.

"We have shown that putting waxes and other inert materials into wood, even under conditions that carry the wax into the cell-wall structure, will only retard the rate of swelling and shrinking and not alter the final dimension changes. We have found that to minimize the dimension changes under prolonged exposure to low or high relative humidities, it is necessary to cause the treating material to react with

the chemically active groups in wood so as to remove chemically or block them. Unfortunately, all the chemicals which are selectively absorbed by wood and which can block the active groups in wood are water-soluble. Hence, we realized that we would have to use such water-soluble chemicals, bond them to the wood, and then insolubilize them.

"This was accomplished by thoroughly treating wood with a virtually unpolymerized phenol-formaldehyde mix, causing a bonding of these two chemicals to the wood, then drying the wood at temperatures not exceeding 160 degrees, Fahrenheit, followed by raising the temperatures to cause a reaction between the phenol and the formaldehyde within the cell-wall structure. The resin thus

This is the third of a series of articles on the war achievements of the U. S. Forest Products Laboratory at Madison, Wisconsin. In the January issue packaging research was established as the Laboratory's No. 1 war job; the February issue dealt further with this program—and accomplishments in design and construction of wood aircraft.

becomes an intimate chemical part of the wood."

Wood treated with resin-forming chemicals, followed by curing of the resin without compressing the wood, is called impreg. With phenol-formaldehyde resin, a 75 percent reduction in swelling and shrinking has been attained. Urea resin, on the other hand, has given a maximum reduction of only 45 percent. The treatment also imparts considerable resistance to decay, termites and marine borers. It cuts down to a marked extent the passage of water vapor, greatly increases the electrical resistance and the resistance to most chemicals. But it has practically no effect in improving fire resistance—that is, except when fire-resistant salts are incorporated into the wood. And, contrary to much of the publicity on resin-treated wood, only a few of the strength properties of wood are significantly increased by resin treatment, and the toughness is significantly decreased.

Impreg was manufactured during the war only for military use, largely for housings of electrical control equipment and other as yet secret purposes.

Tougher than impreg, but not quite so tough as the original wood, is compreg, the laboratory's stable form of resin-treated compressed wood. Its dimensional stability, resistance to organisms, chemicals and flow of electricity are practically the same as for impreg. "Most of its strength properties," said Dr. Stamm, "are increased about in proportion to the compression."

Dense woods like birch and maple, he pointed out, when highly compressed, are reduced to one-half the original thickness; spruce will reduce to one-third. When compressed to a specific gravity of about .9 to 1.4, compreg assumes a glossy finish which persists throughout the structure. A cut surface can be sanded and buffed to produce a high degree of finish without the use of applied coatings. Or it is possible to make a combination of compressed faces on an untreated uncompressed core, a form in which compreg will likely find most of its postwar uses.

Most of the compreg propellers made during the war were carved from thick blanks, using metal-working tools, Dr. Stamm revealed. However, several methods for molding compreg were developed. In the latest process, called expansion molding, single dry treated plies in which the resin is uncured are heated to a temperature sufficient to soften the

resin, but insufficient to cure it. They are rapidly compressed in a cold press. The resin which is temporarily jelled holds the plies in the compressed form even though it is uncured. These plies are tailored exactly to fit the mold in which they are locked. The mold is then heated, releasing the pent-up compression and developing enough pressure from within to mold the object.

In addition to its extensive use in propellers, compreg was used during the war for various connector and bearing plates, aerial antenna masts and tooling jigs.

Staypak is a heat-stabilized high-density product made by compressing either solid wood or many layers of thin veneers. The material contains no resin except, in the case of the laminated product, normal amounts to bond the veneers during pressing. And this is its chief virtue, for in a combination of wood and synthetic resin the embrittling characteristic of the resin is retained. This is why compreg, although most of its strength properties are high, is more brittle than the original wood.

In tackling the problem of a resinless stabilized wood, Dr. Stamm and his associates started out with the knowledge that improved woods made simply by compression were susceptible, under high moisture conditions, not only to ordinary swelling, but also to "springback", a release of pent-up stresses resulting from compression, and a return to original unpressed dimensions. To them this was an understandable phenomenon. The cells of the wood, deformed during the pressing, tend to resume their original stress-free shape. On swelling, the release of pent-up stresses starts, and because swelling softens or plasticizes the wood, further release of the stresses is spontaneous.

"The obvious solution of the problem," said Dr. Stamm, "lay in avoiding the stresses by some form of plasticizing softening action while the wood was still under pressure. We reasoned that the stresses could be prevented if the lignin cementing material between the fibers could be made to flow somewhat during the pressing process. Lignin can be made to flow by applying heat alone, but this requires such high temperatures that the wood tends to burn. The use of plasticizers to lower the flow temperature of lignin was tried. Fortunately, water proved to be the best plasticizer.

"Finally it was determined that all that was necessary to produce a compressed product practically free from

springback was to compress for the proper length of time at somewhat higher temperatures and moisture contents than had previously been used. The highly stable properties are developed only when the wood is virtually completely compressed to a specific gravity between 1.3 and 1.4."

At comparable moisture content and specific gravity values, the compressive strength of staypak is lower than that of compreg, but the tensile strength parallel to the grain and bending properties is about 25 percent higher. Tensile and flexural values are about double the average values for natural yellow birch—triple the values for Sitka spruce. Its chief physical advantage over compreg, however, is that it is about twice as tough.

Another field of research which made significant contributions to this country's superiority in the air was the molding of plywood from strips or sheets of glue-coated veneer by means of pressure applied through a bag or blanket. This process is called bag-molding, though a more inclusive term is fluid-pressure molding. It was used extensively in the production of curved parts of training planes and for radar domes and droppable gas tanks.

Bag-molding of plywood is not new, as it was introduced in the furniture industry about 20 years ago. But the men of Madison modernized techniques to produce molded plywood of aircraft quality. "The application of heat to the glue during the pressure period is the basic difference between present-day bag-molding and the older vacuum-bag process," said B. G. Heebink of the laboratory staff. "The new processes, therefore, permit the use of thermosetting and thermoplastic glues with long assembly periods."

In principle, he explained, the technique consists of attaching temporarily superimposed layers of glue-coated strips of veneer to a mold of the desired shape, and molding these into a unit structure by the application of heat and fluid pressure through a flexible, impermeable bag or blanket. "The process is relatively simple and provides a means by which plywood of simple or compound curvature, and of constant or varying thickness, in any arrangement of plies, can be produced."

Bag-molding operations require bags made of specially compounded rubber. "The purpose of the bag," Mr. Heebink declared, "is to provide

(Turn to page 142)



# AFA Board Elects Vice-Presidents

KARL T. FREDERICK, chairman of the board of the New York State Conservation Council, and William B. Greeley, former chief forester of the United States and until his retirement late in 1945 secretary-manager of the West Coast Lumbermen's Association, have been elected active vice-presidents of The American Forestry Association. This action was taken by the board of directors meeting in New York on January 28, in accordance with the by-laws of the association as amended last year.

The amendment provides for the election by the board of two vice-presidents, in addition to the 21 honorary vice-presidents elected annually by vote of the membership of the association.

Mr. Frederick, who has served as a director of the association since 1937, has also been closely affiliated with such outstanding organizations as the Association for the Protection of the Adirondacks, the Camp Fire Club of America and the National Wildlife Federation. He holds degrees from both Princeton University and the Harvard Law School.

Mr. Greeley, widely known in this country and abroad for his distinguished work in the field of forestry, has served on the association's board of directors continuously—with the exception of one interruption from 1927 to 1928—since 1915. Gradu-

ated from the Yale Forest School in 1904, he entered the U. S. Forest Service the same year. He was appointed chief forester in 1920, serving until his resignation in 1928 to become secretary-manager of the West Coast Lumbermen's Association. During World War I, as lieutenant colonel of engineers, he organized forestry operations of American engineer troops with the American Expeditionary Forces in France.

As previously announced, C. P. Wilber, state forester of New Jersey, has been reelected to the board of directors for a two-year term. New members of the board are G. F. Jewett, chairman, Forest Conservation Committee, National Lumber Manufacturers Association, for a term of three years, and James J. Storrow, of Massachusetts, treasurer, Society for the Protection of New Hampshire Forests, for a four-year term.



William B. Greeley—vice-president



Karl T. Frederick—vice-president



C. P. Wilber—reelected director



George F. Jewett—elected director



James J. Storrow—elected director

## Oregon's Unequaled Forest Capital

(From page 124)

Northwest goes to the Hudson Bay post, Fort Vancouver, Washington. This simple, water-driven up-and-down sash-saw was installed during the winter of 1827-28. It is amusing to read that the trees were felled, rolled into the Columbia River and towed to this pioneer plant by a crew of husky Sandwich Islanders, or Hawaiians. Ten years later, when the first Americans—missionaries, mountain-men and adventurers—had begun to enter the Willamette Valley, a sawmill was built at Newberg. By 1849, there were 30 mills in Oregon, chiefly in the northwestern settlements.

After arbitration in 1846, of the long-pending boundary controversy with Great Britain, the territory which is now Oregon belonged to the United States and, thereafter, its lands were thrown open for settlement and private ownership, under various acts of Congress. The usual grants were made to the state government for establishment and maintenance of a state capital, and for various kinds of schools and other institutions. Similarly, large grants were made to private companies in consideration of the opening of military-wagon-tracks and construction of operable railway lines. In settlement of Indian troubles, considerable areas were secured to various tribes and, of course, under the several homestead and entry laws, individuals came into possession of a large acreage of lands selected by them as most desirable.

Since more than half of its 61,958,618 acres is semi-arid range or high mountain forest, it is not strange that less than half of Oregon's surface should have been transferred to private hands. Actually, considerable acreages of once private holdings have found their way, by reversion or recapture, back to federal, state and county ownership.

Far more important, in the late years of the last century awakened public opinion began to demand withdrawal of much forested public domain from private entry and so forested transfer to private control of forests and scenic areas which were belatedly increasing in value. Suffice it to report that, as of today, less than 27 million acres is owned by private organizations or by individuals.

The public owners are: Uncle Sam, with 52 percent; the state, with 2.5 percent; counties and smaller sub-divisions, with 2 percent. Large private and corporate owners have 8.5 percent, and small private and corporate owners, the balance, or 35 percent. The following tabulation indicates the present ownership pattern as it affects the commercial forest areas of Oregon:

EASTERN OREGON (PINE REGION)	
	Acres
Federal Ownership (Includes Indian Lands and National Parks)	8,191,445
State Ownership	49,170
County and Municipal Ownership	81,695
Private Ownership	3,433,295
<b>Total</b>	<b>11,755,605</b>
WESTERN OREGON (DOUGLASFIR REGION)	
	Acres
Federal Ownership (see above)	7,468,725
State Ownership	463,610
County and Municipal Ownership	545,195
Private Ownership	6,544,915
<b>Total</b>	<b>15,002,445</b>

Of course, this picture is incomplete, since it does not show a comparison between public and private forest ownership in terms of timber now merchantable, or to be grown in future. Obviously, not all Oregon forest lands are alike

in their timber producing capabilities. Nor has timber harvesting progressed equally in all parts of the state. As has been suggested earlier, some forest lands are still covered with dense stands of magnificent timber, in places over-mature and stagnated. Considerable areas have been cut-over, and already new forests are growing or will begin to grow, as soon as nature or man can replant such lands. Also, in the high mountains and along the edges of arid zones, there are forests which may have negligible value as producers of wood for industry, but still are indispensable to the state economy. These add up to 2,329,690 acres.

Foresters often speak of multiple use. The term may mean reliance upon the forest for water; for timber and other plant products, including stock forage; and for sport and scenery. In Oregon, all these uses are important. By virtue of impounded snow water, farmers grow bountiful crops upon more than a million acres of land reclaimed from the desert. Mountain stream beds produce hay for thousands of east-side ranches; and, even in the established farm and orchard regions west of the Cascades, supplemental irrigation permits full development of agriculture.

More than a million sheep and possibly a quarter as many beef cattle, spend at least a part of their lives upon woodland pastures. Hunting and fishing are enjoyed by a large portion of the population, while thousands of outsiders visit the state each year to indulge in these sports. Recreation experts estimate that, during the last years before war interfered, tourists spent \$20,000,000, annually, in the state.

Important as these uses are, timber production claims pre-eminence now and in the foreseeable future, by virtue of especially favorable growing conditions and the state's strategic situation in the Pacific area. In such timber growing each of the several classes of forest owners will have a stake. People are awakening to the possibilities in forest management, so that the state stands on the threshold of permanent prosperity based upon renewal of such a resource. Yet, in fact the primeval stands are by no means exhausted, as current estimates show.

### VOLUME OF COMMERCIAL SAWTIMBER AVAILABLE FOR HARVESTING

In thousand board feet, Log Scale, Scribner rule: hardwoods and pines exceeding 11 inches, other conifers exceeding 15 inches DBH.

Eastern Oregon	
Douglasfir	7,367,463
Ponderosa (and Jeffrey) pine	52,761,901
Other pines, western larch	4,644,051
Spruces, hemlock and true firs	8,574,175
Cedars	216,521
Hardwoods	18,711
<b>Total Eastern Oregon</b>	<b>73,582,822</b>
Western Oregon	
Douglasfir	204,755,077
Pines, western larch and miscellaneous soft-woods	12,030,229
Spruces, hemlocks and true firs	36,002,499
Cedars	6,044,247
Hardwoods	2,427,305
<b>Total Western Oregon</b>	<b>261,259,357</b>
Reserved commercial timber, unavailable for harvesting	
Eastern Oregon	3,243,906
Western Oregon	1,748,674

(Turn to page 140)



## INTERNATIONALS for Profitable Logging

● Handle more board feet per dollar of operating costs—speed up your hauling cycle—and cut hourly costs for fuel, lubrication and maintenance down to bed rock.

It doesn't matter whether it's lumber or pulpwood you're logging, your profits are better when International Diesel TracTractors are used.

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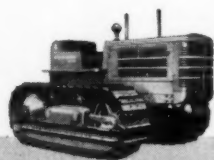
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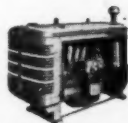
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# WHISKEY *Cooperage*

By H. F. WILLKIE and  
DR. PAUL A. KOLACHOV

**The question here is: should re-use of whiskey barrels be legalized to conserve our supplies of white oak lumber?**

EVERY year in normal times, the distilling industry uses over 2,500,000 new charred oak barrels in which to store and age whiskey. These barrels are made from the highest quality of white oak lumber and their construction uses 225,000,000 feet of it. In accordance with government regulations brought about in 1936, once a barrel is used for whiskey maturation it cannot again be used for that purpose unless the product is labeled to show that whiskey has been aged in a used container. This means no age may be legally claimed on the whiskey. The immediate result of this is that the distilleries must replace the used barrels with new ones. Each time this is done further inroads are made upon the nation's diminishing supply of white oak.

Not only is this a needless waste at a time when intelligent forest conservation is sorely needed, but it is a needless waste of the finest type of selected white oak that can be found. Barrels used to age whiskey must be as nearly perfect in material and in construction as possible. In order to get a barrel that is tough, strong and dense, only that wood which is grown on rich arable land can be used. With a connoisseur's eye for perfection, the wood for barrel manufacture is carefully selected. Timber from boggy land is not usable because it is apt to be too porous. Timber grown in coal vein regions may contain pin worms or

streaks and is likewise rejected. The same is true for wood grown in open areas and on hilltops for it becomes twisted and scalded in growth, and the barrel made from that wood is not a trustworthy container. For this reason only 40 percent of an average stand of white oak is available for stave manufacture, thus making it all the more important to conserve such a restricted supply.

These precautionary measures do not end with the selection of the lumber.

After the correct grade of wood has been secured, the barrel is carefully constructed according to specifications derived through intensive research and experience. The bilge angle, the moisture content, the number of hoops, the croze and howel design are painstakingly determined in order to get a barrel that can endure rough handling both in manufacture and use caused by loading, rolling, racking and temperature and humidity changes.

When barrels are received at the distillery each barrel is subjected to a thorough scrutiny by competent and experienced inspectors for defects which may cause the distillery great losses in whiskey—and money. There are many flaws which call for the discard of a barrel. Each barrel is inspected for pegs used to plug streaks, for pin and seed holes, and

spot worms and worm holes which result in leakage; for broken staves and splits which will render that barrel useless. Knots, seasoning checks, catfaces, severe crossgrain, the presence of sapwood, or rough irregular bung staves and bung holes must be guarded against because these cause leaks which would result in losses to the distillery.

The barrel which can pass such rigid standards is as nearly perfect as human ingenuity can make it. That single barrel with its 90 feet of high quality white oak wood is well worth its initial peacetime cost of \$8, yet the instant it receives the whiskey, the value of the barrel, as such, plunges to 15 or 25 cents for use as a common shipping package. From the standpoint of quality, however, the barrel is actually in better condition than before it was used. Constant inspection and repairing of leaks during the maturation period make it in nearly perfect condition. With all the defects removed, the barrel becomes a much safer container for whiskey, and hence is intrinsically more valuable to the distillery than a new one.

In 1935 there was a Senate hearing in Washington, D. C. on Regulation No. 5, which stated that under the regulations a distillery is not entitled to claim age on a whiskey which has been aged in reused cooperage. (Turn to page 144)

**In normal times, the distilling industry each year uses more than 2,500,000 new charred oak barrels in which to store and age whiskey**



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# AROUND THE WORLD

## American Republics Seek Conservation Congress

The Governing Board of the Pan American Union has requested the United States Government to convoke a conservation congress in this country in June, 1947, to consider the problem of the protection and better utilization of the hemisphere's renewable resources.

This action, unanimously recommended by the Third Inter-American Agricultural Conference in Caracas, Venezuela, last July, is the result of studies carried on in a number of Latin American countries and the United States during the past two and a half years. Prepared under the direction of William Vogt, chief of the Conservation Section, Division of Agricultural Cooperation of the Pan American Union, these studies have revealed such an alarming downward trend in the natural resources of the hemisphere that the conference is projected for the purpose of assembling and coordinating information on natural resources, and the initiation of conservation programs.

Latin America, according to Mr. Vogt, is far from being a rich storehouse of untapped natural resources. Vast areas have been deforested, and the destruction of forests is increasing at an accelerated rate. Over-grazing, through the maintenance of excessively large herds of cattle, sheep, and especially goats, is very general. With the destruction of vegetation, soil erosion has become the No. 1 problem in most Latin American countries. Rivers are silting in some cases, it is believed, at a faster rate than the Mississippi; and floods, resulting from upstream misuse of the land, are becoming increasingly dangerous. Wildlife, potentially a very important resource, is being exterminated through widespread destruction of habitat and, in many countries, through uncontrolled hunting.

The conference will be devoted primarily to field studies of land-use problems, such as sustained-yield forestry, grazing land administration, national parks, watershed organization and water conservation, wildlife management and soil conservation districts, and perhaps marine and stream fisheries management and research.

## Czech Forest Reserves Low

Czechoslovakia's reserves of timber ready for felling are much lower than they were in 1939, because of German exploitation of the forests. Approximately one-third of the country's area, or about 9,884,000 acres, is forest land. Of this area, about 2,470,000 acres were formerly state owned, but under the nationalization program most of the afforested land will become state property to assure unified control and planned exploitation.

Sawmills in Czechoslovakia escaped serious damage during the war; some mills were enlarged and some new mills were built by the Germans in an effort to offset their losses in the Reich. The ravages of German occupation on the raw materials, however, will probably keep output of the lumber industry considerably below pre-war production.

## French Request Fire Control Aid

Nearly a half billion board feet of timber is estimated to have been destroyed by forest fires which burned over large areas of maritime pine in France late in the summer of 1945. Use of airplanes for patrolling the pine forests has been offered by the French military agencies, and co-operation in the forest patrol project is being asked of the U. S. Forest Service.

## USSR Reforests

In the part of the Soviet Union occupied by the enemy during the war, 3,211,000 acres of forest must be restored, according to the Soviet press. In October 1945 about 138 thousand acres had already been replanted and reseeded, and 247 thousand additional acres are expected to be replanted in the spring of 1946. The area reforested each year will be gradually increased until it reaches 590 thousand acres in 1948.

Pine, oak, and fir will be the most widely distributed trees; poplar will be planted in the river valleys. Larch, which provides lumber suitable for sluices, dams, and other hydraulic installations, will be planted in the European part of the Soviet Union for the first time. The Amur velvet tree and walnut will be planted in the Ukraine and the Crimea.

## Forest Industries Issue Policy Statement

The following statement of forest policy has been approved and subscribed to by the American Paper and Pulp Association, the American Pulpwood Association, and the National Lumber Manufacturers' Association:

"Permanent industries capable of producing continuous supplies of forest products are essential to the national welfare. The necessity for wise use of our forest resources in maintaining such industries and the communities dependent upon them is recognized. Having faith that private enterprise and initiative can provide the most effective management, use, and renewal of our nation's forests, the forest industries pledge united leadership for betterment of America's forests, and the attainment of continuous forest production. In fulfillment of this policy, the forest industries agree to:

"1. Promote the extension of permanent and dependable protection against fire to all forest lands, irrespective of ownership.

"2. Urge all forest owners and forest operators to develop and adopt forest practices designed to insure the continuous production of timber on all areas as harvested, irrespective of ownership.

"3. Confirm the sound economic policy of encouraging private ownership of lands which are being or can be profitably managed for continuous production of forest crops, and encourage a national land policy to include the sale and exchange of public lands in order to restore desirable lands to private ownership as well as to consolidate public holdings.

"4. Encourage public ownership and practical management of forest lands which are incapable of producing sufficient wood to maintain profitable private ownership.

"5. Advocate equalization of state and local taxes on forest land that reasonably support their fair proportion of local responsibilities, and that encourage private ownership of forest lands.

"6. Support in each forested state a competent, adequately staffed and financed state forestry organization, qualified to manage state-owned forest lands, to administer and enforce



# A Memorial Forest?



*Here's help for Planning Committees charged with the choice of a suitable means of permanent commemoration for the men and women who served in World War II.*


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Committees. . . . Your copy will be reserved if you write at once.

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memorial forest — an indestructible form for the listing of names, or for the inscription of sentiments or dedicatory phrases.

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state laws relative to privately owned forest lands, and to provide adequate cooperation with all timberland owners in the state in solving forestry problems.

"7. Support public regulation when necessary or desirable, to be administered under state law. The need or desirability of such regulation and its scope if undertaken to be determined by the people of each state.

"8. Cooperate with public and private agencies in the control or abatement of major forest insects and diseases.

"9. Develop more complete utilization of forest products."

### Greeley Heads Industrial Forestry Program

Colonel William B. Greeley has been appointed to head the nationwide "trees for tomorrow" program of the forest industries.

Former chief of the United States Forest Service, and for the past 18 years secretary-manager of the West Coast Lumbermen's Association, Colonel Greeley becomes chairman of the board of directors of American Forest Products Industries, Inc. In this new work, he will head an all-American movement sponsored by all forest industries—pulp and paper, lumber, plywood, shingles and others—to stimulate the growing of more trees on privately owned forest lands.

In announcing the appointment of Colonel Greeley, Corydon Wagner, Tacoma, Washington, chairman of the administration committee of AFPI, said, "No man in this country is so generally held to have more understanding knowledge or to have exerted more constructive leadership in the establishment of practical and progressive forestry principles than Colonel Greeley."

### Philippine Lumber Production Up

The Philippine Bureau of Forestry reports that applications for timber cutting rights have been so numerous that they cover all sites on the Islands suitable for lumbering, except for heavily forested and practically unexplored areas in northeastern Luzon and the malarial areas of Palawan. Considerable interest has been shown by U. S. servicemen who expect to return to the Philippines after completing their war service. Increased output of forest products, however, must await distribution of tools and equipment and the reestablishment of highway, railway and sea transportation. In December lumber was still selling for seven times the normal price in Manila. Of 38 sawmills operating in December, nine were supplying civilian requirements, the others being operated by or for the U. S. Army.

### Big Game Population Increases

Big game animals have been substantially benefited by federal, state and private cooperative management and by restrictions on hunting brought about by the war, particularly on the national forests, according to the latest yearly game estimate. The big game population on national forests—principally deer, elk and bear—for the year ending 1944 was put at 2,300,000. In the past two decades, the game supply doubled during each 10 years of management. Based on the number of animals per 100 acres, the U. S. Forest Service has twice as many big game animals under its management as has any other government agency, according to a recent survey made by the U. S. Fish and Wildlife Service.

### AUTHORS and PHOTO CREDITS

DON CARPENTER (*Trout Water—Pisgah Style*) is a U. S. Forest Service writer. CHAPIN COLLINS (*Saga of McCleary*), former newspaper publisher, is now with the American Forest Products Industries, Inc. CHARLES ELLIOTT (*Mary's Sons*) is director, Georgia Game and Fish Commission, Atlanta. S. L. FROST (*Growing Profits in Pine*) is chief of the division of information, Texas Forest Service. ARTHUR NETTLETON, F.R.G.S. (*Britain Replants*) is a well known London writer. ARTHUR PRIAULX (*Tree Planter*) is a feature writer living in Eugene, Oregon. H. F. WILKIE (*Whiskey Cooperage*) is vice president of Joseph E. Seagram and Sons, Inc.; Dr. Paul J. Kolachov is technical counselor of that company. JOHN B. WOODS (*Oregon's Unequaled Forest Capital*) is director of The American Forestry Association's Forest Resource Appraisal.

Credit for photographs used in this issue is acknowledged as follows:

British Council, pages 110 and 111.  
King, Porter, page 122.

Munger's, page 104.

Texas Forest Service, pages 106, 107 and 108.

U. S. Forest Products Laboratory, page 125.

U. S. Forest Service, pages 108 and 126 (upper).

## CONSERVATION CALENDAR

Important Bills in Congress  
With Action to February  
20, 1946

### Fish and Wildlife

H. R. 4362—BATES—To abolish the Parker River National Wildlife Refuge in Essex County, Massachusetts, to authorize and direct the restoration to the former owners of the land comprising such refuge, etc. Reported in House (Report No. 1555), February 12.

### National Forests

S. 913 — HAYDEN — To protect scenic values along and tributary to the Catalina Highway within the Coronado National Forest. Reported in Senate (Report 899), January 28.

S. 1226—HATCH—To adjust the exterior boundaries of the Kaibab National Forest, the Grand Canyon National Game Preserve, and Arizona Grazing District Number 1. Reported in Senate (Report No. 895), January 28.

### National Parks

S. 1273—HATCH—To provide for the acquisition by exchange of non-federal property within areas administered by the National Park Service (Glacier National Park). Reported in Senate (Report No. 900), January 28.

S. 1839 — HATCH — To provide basic authority for the performance of certain functions and activities of the National Park Service. To Committee on Public Lands, February 15.

### National Seashores

H. R. 3028—BONNER—To amend the act of August 17, 1937, as amended relating to the establishment of the Cape Hatteras National Seashore Recreational Area, North Carolina. Passed by the House, November 5, 1945. Reported in Senate (Report No. 897), January 28.

### Public Domain

H. R. 2593—ELLSWORTH—Relating to the administrative jurisdiction of certain public lands in the State of Oregon (O & C Lands). Reported in House (Report No. 1564), February 12.

### Water and Stream Control

S. J. Res. 105 (H. J. Res. 265) (H. Res. 510)—To provide for proceeding with certain river and harbor projects heretofore authorized to be prosecuted after the termination of the war. Passed Senate, November 20, 1945. Passed House, February 8.



## HELICOPTERS—HOW SOON?

This Army XR-8 helicopter and its military successors, designed and produced by Kellett, are helping us prepare to produce advanced helicopters to fit the needs of commerce and industry. Sixteen years of aircraft manufacturing experience equip us to understand those needs, and to approach the helicopter's future confidently.

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## HELICOPTERS



## Watts Sees 2,500,000 New Jobs in Forestry Program

AROUND two and a half million new and permanent jobs toward the goal of full employment can ultimately be created through an adequate nationwide forestry program, Lyle F. Watts, chief of the U. S. Forest Service states in his 1945 annual report.

"During the war we have subordinated our long-term objectives to activities contributing to war production and military use of forest products," he wrote. "Now it is time to gear our program to the needs of an expanded peacetime economy."

Mr. Watts said that now the nation's forests directly or indirectly provide about 3,750,000 jobs, but that if the productivity of our depleted forests and rundown ranges was restored, and if other resources of the forests were fully developed, the employment figure might be stepped up to a total of 6,250,000.

As one step in building up the nation's productive assets to sustain an increase of 2,500,000 jobs "in the basic level of industrial employment" a program of public and private forest work that would keep almost 350 thousand men busy for about six years and cost in the neighborhood of

five billion dollars was recommended. He advocated a comprehensive forestry program, including (1) nationwide regulation of timber cutting and related forest practices as assurance that the nation's forests shall be kept reasonably productive; (2) public ownership of millions of acres which private owners find unprofitable to hold or on which watershed, recreation or other public interests outweigh the interest of a single owner, and (3) increased government assistance to private forest owners.

Breakdown of the 350 thousand-man forest work program shows that if work of the kind carried on before the war by the Civilian Conservation Corps was resumed, about 163 thousand new jobs could be set up in the woods "without delay." Confined largely to the publicly-owned federal, state and community forests, though including some protection work on privately-owned land, this part of the overall program would cost \$2,215,000,000 over the six-year period. Such work would involve building a network of forest highways; gaining access to undeveloped areas through the construction of forest roads and trails; expansion of

facilities for fire protection; tree planting; thinning, pruning and improvement work in young timber stands; range improvement; upstream work to reduce floods and recreational improvements.

But the volume of essential public forest work could be greatly expanded "if land now largely useless and idle" were purchased from private owners and restored to full production by reforestation and improvement. Here, declared the report, 30,000 men could be employed for six years at a cost of \$500,000,000. An even larger back-log of useful work was seen in the job of rehabilitating run-down, privately owned forests and of planting thousands of miles of shelterbelts on the great treeless plains west of the Mississippi. Such private work, according to the chief forester, would employ almost 150 thousand men for six years and cost \$2,350,000,000.

The report states that lumber needed for domestic consumption in the next ten years will average 33 billion board feet annually, and that wartime timber cutting and losses by fire, insects and disease were 50 percent greater than annual timber growth.

## Interior Department Reports War's Effect on Resources

The annual report of the Secretary of the Interior shows that although the use of prodigious quantities of minerals during the struggle for victory had in many cases seriously depleted the nation's supply of major minerals, the renewable natural resources under the jurisdiction of the Department had come through the war period little damaged and in some cases in improved condition.

The war had little effect on the abundance of the continental fish and wildlife resources which are worth, according to the estimate of the Fish and Wildlife Service, something over 140 billion dollars. If anything, war conditions favored these resources, since hunting and fishing were generally below the peacetime normal.

The National Park System, which administers areas valued as real estate only at about a billion dollars, but almost priceless because of scenery or historic or prehistoric associations, came through the war virtually unimpaired, the report indicates.

The surface resources of the 144 million acres of federal range administered by the Grazing Service in ten

western states are in as good condition as they were at the beginning of the war, or in even better condition. This is true despite the effective contribution made by the range to the nation's war needs. This is in sharp contrast, the report states, to the situation following the first World War.

The 778 million acres of public land administered by the General Land Office, according to this report, also contributed largely to the nation during the war, particularly in minerals, timber, and food. Chief damage to the public lands during the war, other than the depletion of mineral resources, was in the necessary retarding of the soil conservation program of the Land Office.

Definite progress has been made, it was stated, in the establishment of sustained yield forest management on all federal lands under the General Land Office jurisdiction. Under this program, forestry operations on the timbered public domain eventually will be brought into a balance in which the volume of tree-cutting and tree-growing will be regulated to provide a continuing supply of timber.

The forests and woodlands of the

public domain are estimated as now being worth \$160,000,000, grazing lands under the jurisdiction of the Land Office, another \$30,000,000.

During the war years, 1942, 1943, and 1944, agricultural products raised on Indian lands had a value of nearly \$95,000,000. Livestock marketed and consumed by Indians was valued at \$51,570,000. Lumber production totaled 1,600 million board feet valued at \$7,000,000.

While the amount of Indian-owned livestock grazing on Indian-owned land increased to a remarkable extent during the war, there was less damage to the range than might have been expected since during the drought years the livestock population on the ranges of the Great Plains had been depleted and in many instances is not yet fully restored.

While the nation's renewable natural resources did not suffer damage during the war which cannot be repaired through careful conservation practices, the Secretary said the loss of non-renewable assets such as metals and petroleum was sufficient to be a cause for national concern.

## Saga of McCleary

(From page 118)

crops, began to uncross their fingers. The afternoon group on the street corner now talks improvements, rather than new locations.

Another reason is that McCleary's residents are also McCleary's citizens, now. Having bought a town, the company immediately started getting rid of it.

"We're in the manufacturing business," says Kreienbaum. "We don't want to run a town."

So they sold the business property and the houses, most of which are being purchased by their occupants on a rental basis. The townspeople incorporated their own government, and they're running it. They bought their electric distribution system for \$6,000, and they're running that, too. It carried a state appraisal of \$30,000, and had been newly reconditioned for \$10,000.

In a friendly gesture to relieve the company of taxes, McCleary's citizens gerrymandered the town boundary to leave the big mills outside the limits. But the company's manager took a red pencil and extended the borders around the mills.

"You can't run a town on taxes from homes alone," he said. "This is our town, too, and we want to pay our share."

McCleary has a Booster's Club now, meeting every Monday night. It has its mayor and town council. Its first park board sent out a call for donated shrubs. The number of registered voters has increased materially. No, sir. McCleary is going places as *McCleary*.

Bill Sheets, editor of the *McCleary Builder*, puts it this way: "This isn't philanthropy,—it's simply good business along modern American lines, and I've seen production records that prove it."

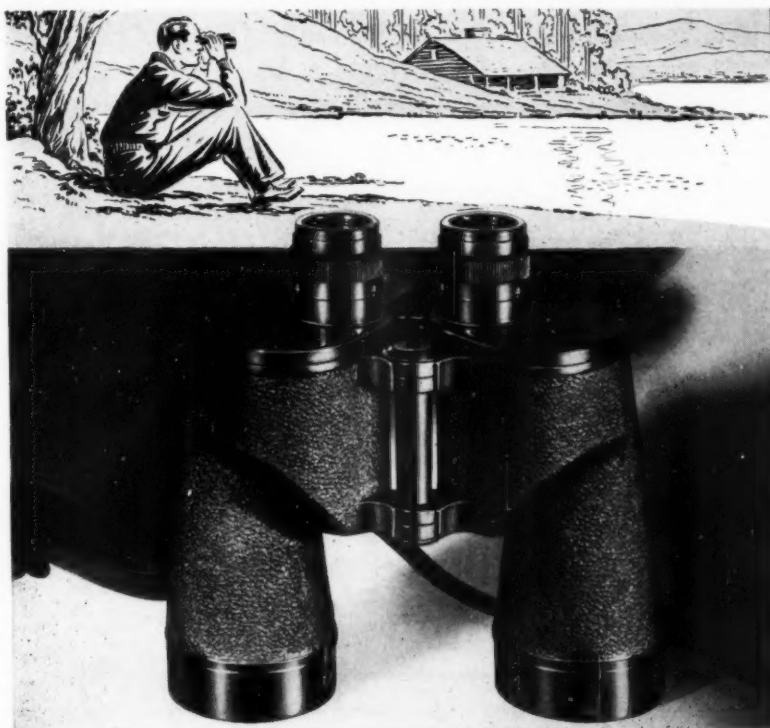
Which is one way of saying that democracy has come to McCleary—and it works.

## Britain Replants

(From page 111)

in the nurseries, and even during its early life in the forest proper it is liable to succumb unless given assistance. Oak transplants are therefore established among the pines in the larger forests during their first few years after leaving the nurseries, a plan which affords them shelter.

Owners of private forests in Britain are supplied with transplants from the state nurseries. In 1924, nine-



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#### Financial Statement

##### The American Forestry Association

BALANCE SHEET AS OF DECEMBER 31, 1945

ASSETS		LIABILITIES AND SURPLUS	
Cash	\$25,948.95	Accounts Payable	\$2,152.13
Accounts Receivable	4,539.12	Reserve for Prepaid memberships	42,531.88
Depreciation Fund	1,000.00	Reserve for Retirement Insurance	2,500.00
Accrued Interest Receivable	698.21	Surplus	283,675.82
Inventories	3,608.24		
Deferred Charges	3,279.37		
Endowment Fund (Including Real Estate)	291,112.28		
Furniture and Equipment	673.66		
<b>TOTAL</b>	<b>\$330,859.83</b>	<b>TOTAL</b>	<b>\$330,859.83</b>

#### INCOME AND EXPENSE ACCOUNT FOR YEAR ENDING DECEMBER 31, 1945

EXPENSE		INCOME	
General Administration	\$33,620.81	Membership Dues	\$63,770.24
American Forests Magazine	43,770.22	Advertising	19,577.22
Membership	18,768.03	Interest	4,989.11
Forester's Office	2,874.99	Donations	1,457.20
Educational Publicity	3,957.84	Forester's Office	2,486.00
Field Secretary	1,498.16	Miscellaneous	4,545.84
		Sale of Publications	7,439.15
		Operating Deficit	225.29
<b>TOTAL</b>	<b>\$104,490.05</b>	<b>TOTAL</b>	<b>\$104,490.05</b>

#### FOREST RESOURCE APPRAISAL

##### INCOME AND EXPENSE ACCOUNT FOR YEAR ENDING DECEMBER 31, 1945

Expenditures	\$97,468.84	Income (Donations)	\$83,627.46
		Excess Expenditures over Income	13,841.38
<b>TOTAL</b>	<b>\$97,468.84</b>	<b>TOTAL</b>	<b>\$97,468.84</b>

#### AS TRUSTEE FOR AMERICAN FOREST FIRE MEDAL PROJECT

Expenses	\$28.90	Receipts	\$70.51
Total Balance this Fund December 31, 1945			\$2,856.28

tents of Britain's woodlands were private property, and although the extension of state forests since that time has considerably reduced the proportion, the number of privately owned woodlands is still considerable.

In some instances, private forests have been leased by the Forestry Commission and are undergoing restoration and extension with transplants from the state nurseries. The largest privately owned forest in the United Kingdom, Savernake Forest, is being developed in this way. The property, in the Newbury (Berkshire) neighborhood, has been leased by the state for 999 years.

Run in connection with these various enterprises, the tree nurseries are intended eventually to be the means whereby Britain grows one-third of the timber she needs each year. She will then have an area of effective forest which places her on a comparative basis with other European nations.

France has an effective forest acreage of 19 percent, and the prewar figure for Germany was 27 percent. Britain's target of 10 percent is therefore not excessive, and there appears to be no reason why, with scientific nursery operations and transplanting, it cannot be achieved.

#### Tree Planter

(From page 121)

ests was done with bare roots. That is the seedlings were planted with only the small amount of soil which clung to their roots. This method proved too slow, so Miller experimented with various root wrappings. He tried using a porous towel, newspaper and various tissues. And, although there were many who claimed the wrapping method would not work because the seedling roots would be too closely confined tests proved that Miller was right.

Just six months ago Miller planted a few hundred trees on the Black Rock State Forest. The tiny fellows were wrapped in a paper napkin in a small covering of peat moss. Early in December several of the seedlings were dug up by Miller in company of Axel Brandstrom, Crown-Zellerbach chief forester, and Dr. Walter Holzer, research chemist with Crown-Zellerbach at Camas, Washington. The two men were trying to help Miller by determining the best type of paper for the wrapping job. The tiny seedlings, just six months in the ground were not only firmly rooted but the root systems showed a perfect pattern, which Miller said would insure a normal, healthy tree.



An examination of several sample plots, planted with the aid of the Miller tool, showed some excellent results from a survival standpoint. Miller estimates that tool-planted trees during the last three years of experimenting, have survived as much as 95 percent and in several plots every seedling has grown. One of the reasons for this remarkable vigor, especially in the wrapped seedlings, is that the peat moss, wrapped in with the roots, serves to give the tiny seedling a real boost in its first year in strange soil.

Another reason for this high survival, Miller points out, is the virtual elimination of air pockets around the seedling roots, which cause fungus growth. When using a planting tool, only a small hole is opened, and this is easily filled when the tool is jammed down into the dagger-shaped spot and the earth crowded against the seedling's roots.

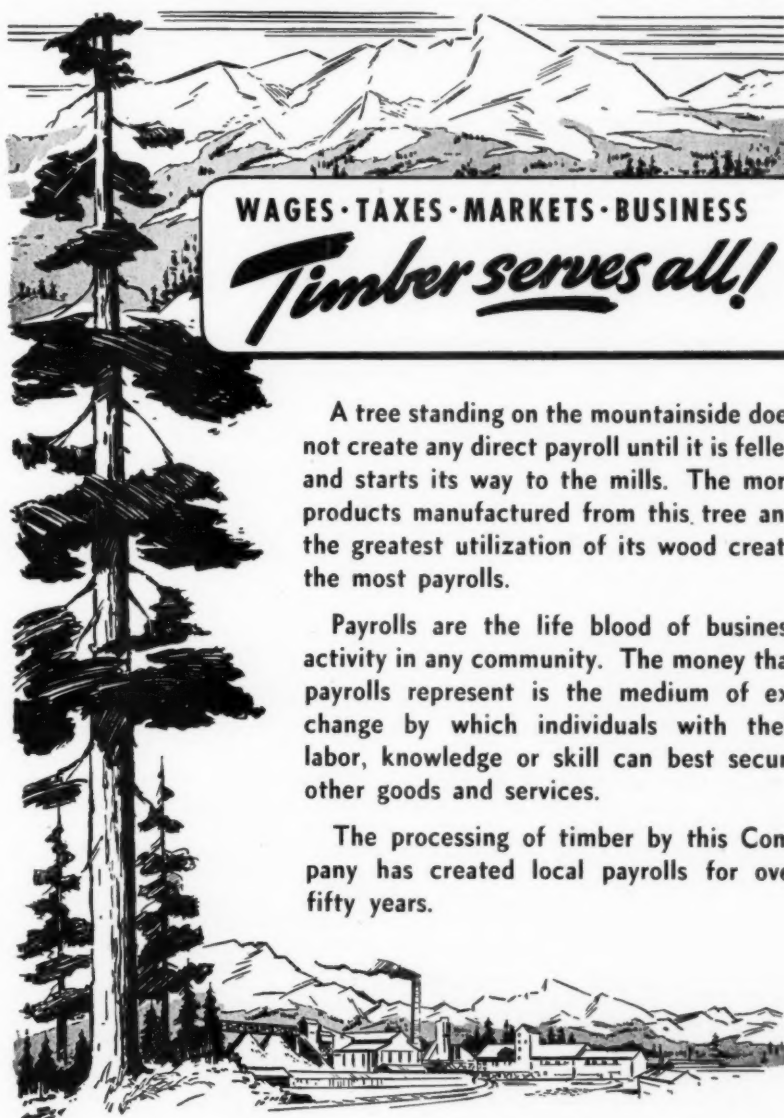
At the state forester's office, and among foresters who have seen it work, there is real enthusiasm for Miller's invention, which he is having patented. It is inexpensive. Light in weight, it weighs just six pounds, five ounces. It is fast, for a planter can load the new seedling as he takes his two steps from the last spot where he set a tree.

Cost of tree planting has been cut in less than half with this simple device, even taking Miller's admittedly conservative figures. This new development, reducing by one-half the money invested in labor in hand-planted areas, may well revolutionize the reforestation picture in the West. Instead of having \$10 to \$14 invested in each hand-planted acre, an owner can reduce this to \$5 to \$7.

Halving of tree-planting costs may mean one of several things. In the case of state or governmental-owned forests, it will mean doubling the potential area planted for money budgeted. In the case of privately owned forests, it means reduction by one-half or more of original investment, and it could conceivably mean that private owners could either double the areas planted for the money laid aside for reforestation, or it could mean that landowners would go into areas of a lower site class than heretofore thought economically sound.

The only trouble which confronts Miller today is the matter of tree wrapping. His problem is to devise a simple, inexpensive machine which will wrap 5,000 seedlings an hour.

Sam Miller and his aide, Lou Amort, have made a real contribution to western forestry.



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## Oregon's Unequaled Forest Capital

(From page 128)

Among the public agencies charged with timber management, the U. S. Forest Service, with more than 12 million acres of national forests, containing 45 per cent of the state's merchantable sawtimber, holds the key position. When the national forests were established, around the turn of the century, these portions of the forested public domain were regarded as remote and, for many years, the great bulk of commercial logging centered in the more accessible land in private ownership. Today, however, the timber output from the national forests is a considerable item in Oregon production (14.5 per cent, 1944). Of special significance, for the future, is the authority newly enacted by the Congress (Public Law 276), whereunder the Forest Service may integrate the lands in its control with nearby public and private areas for continuous wood production and the maintenance of dependent industries and communities.

Second in importance, is the federal service administering the revested Oregon and California grant lands—some 2,162,000 acres of primeval forests, second growth and cutovers, located in western Oregon and containing, today, about 50 billion board feet of merchantable timber. Congress, in 1937, directed the Department of the Interior to manage these lands for continuous production of commercial timber, and authorized cooperation with other public and private owners, under long-term contracts to this end. This program is now taking form and, meanwhile, the O and C lands are contributing importantly to the forest industries of the state.

The Indian Service, of the Department of the Interior, manages timber properties aggregating about 1,999,000 acres for the red men, mostly in three east-side reservations and containing about 11 billion board feet of merchantable timber. While there is always considerable pressure from the Indians to convert trees into spendable cash, these forests are cut selectively with a view to keeping adequate growing stocks upon the land. The National Park Service, also in the Department of the Interior, protects and operates magnificent Crater Lake National Park, and two small national monuments, for the enjoyment of the public. Like certain other special federal reservations, these lands contain usable tim-

ber which is unavailable for commercial use.

State forestry is a going concern. The forestry department, under direction of an able state board, manages a quarter million acres of state forests, supervises protection upon state and private lands, operates forest nurseries, carries on educational work and administers a forest practices act, calculated to keep private forests continuously productive.

Management of private forest lands is, of course, determined by the owners, large and small. Because of the relatively heavy stands per acre, large investments in timber may be represented by comparatively small holdings. Under the leadership of forest industry trade associations, 23 forest owners have declared their intention to grow trees for future use. Three such "tree farms" in eastern Oregon add up to 666,776 acres, while 20 western Oregon tracts include 505,287 acres of managed private forests.

Probably 90 percent of the wood now being cut and sawn in Oregon for commercial use is logged in conformity with the state forest practices act. Two-thirds or more is produced by firms which intend to stay in business permanently, by growing timber. Some of these operators have sufficient land to carry them along. Many others look to federal or state holdings for a substantial part of their present and future raw material. This is a complex setup, requiring too many words for clear exposition, here. Yet, it is only fair to state that, while there are many operators who now intend to saw up what timber they own, and get out, the overall picture is one of rapidly increasing spread of forest management. Leadership in the movement is a province jointly occupied by public and private foresters.

Recently, attention has been called to the fact that no less than 63 percent of private forest land is owned by 34,700 small holders; farmers, local business men, and absentee investors, often referred to locally as "Iowa school teachers." Thus, the major portion of Oregon's private forest capital belongs to people who, presumably, have little knowledge of forestry principles and who might be reluctant to hire professional foresters. There are two extension foresters now jointly employed by state and federal agencies, to assist such owners. Forestry leaders propose to add 10 or a dozen such field instruc-

tors to this nucleus and so offer needed counsel to many more small forest proprietors.

Among the leading practitioners of forest management, are Oregon pulp and paper producers and the larger manufacturers of lumber. Through changes in logging methods, particularly the substitution of crawler-type tractors and motor trucks for steam skidders and railroads, logging methods now permit selection of trees to cut and protection of those left standing, as was the case in the early days of American forest harvesting. Even where cable logging is more feasible, and clear-cutting results, operators are required by state law to provide seed sources adequate to restock the land.

Today, more than six billion board feet of Oregon trees are annually converted into useful forms. Although there are vast areas of primeval forests, wherein current growth barely exceeds decay, the yearly increment is estimated to be approximately 634 million cubic feet of wood, of which 1,680,000,000 board feet is sawtimber. Western Oregon claims 80 percent of the growth, while the balance occurs east of the mountains. While loss of wood through starvation in young growth is less noticeable in the pine type, this factor is of tremendous importance in the west-side stands and leading foresters are now advocating management of a kind that will forestall such waste. They also declare that growth and output of forest products in western Oregon can be maintained permanently at a level considerably above that of present production.

Forest protection is a common concern of federal, state and private agencies. For many years, under progressive state laws, private owners have pioneered in efforts to control the dendroctonus beetle in pine stands. More recently, state and private forces have joined in efforts to control insect infestation in coast stands of hemlock and spruce. At all times, federal entomologists have been most helpful in studying the habits of insects and possible methods of control. Probably the solution of both insect and tree disease problems really lies in the development of intensive forest management, since, in such forests, both types of losses may be more easily forestalled and when this is impossible, the damaged trees can be salvaged.

Organized fire protection began in Oregon in 1904, and three years later, an employee of the Willamette Valley and Cascade Mountain Wagon Road Company established the first

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In 1906, the U. S. Forest Service began protection in what was then the Cascades National Forest. During the last 40 years, there has been close cooperation, through interchange of services and facilities, among federal and state agencies and the dozen or more private forest patrol associations operating in the state. As recently as 1940, the average annual cost of forest protection in Oregon stood at about two cents an acre. Today, this expenditure is about five cents an acre, per year, contributed by land owners, state legislature and Uncle Sam. The 1945 fire season demonstrated that much is still required to bring forest protection up to levels demanded by permanent forest management. There are threatening accumulations of logging slash in certain areas, and these must be dealt with. Yet, the men and organizations most concerned are directing their efforts at bringing forest protection on a permanently effective basis.

Looking ahead, it must be noted that conditions surrounding manage-

ment differ widely in the two forest regions. East of the Cascades, growth is slower, reproduction less easily secured. And there, because of heavy cutting in private pine stands, Uncle Sam dominates the management picture. Disregarding the negligible county-state ownerships, one finds three-fourths of old growth and small young growth under federal control. This also represents 56 billion board feet, or 76 percent of sawtimber volume. Private holders have 63 percent of fresh cutovers and seedling-sapling areas, and a correspondingly larger restocking problem.

In western Oregon, private owners retain 30 percent of all old growth areas, and 97 billion board feet, or 37 percent of sawtimber volume. Such holders also own 47 percent of the 5,082,465 acres classed as young growth forest, 46 percent of the 1,203,040 acres bearing seedlings and saplings. Private poorly stocked and denuded lands amount to 1,788,255 acres, or 65 percent of the western Oregon total in this category. Here private owners have a chance, unrivalled elsewhere in the United States, to develop forest management programs, by themselves and in cooperation with public agencies.

## House of Wood Magic

(From page 126)

a flexible impervious barrier between the fluid under pressure and the mold. The piece being molded is pressed between this flexible bag and the rigid surface of the mold, and the full fluid pressure is thus applied at right angles to the surface of the bag regardless of its shape."

Although a variety of glues can be used for bag-molding, preference is for those that are dry at the time the veneer is assembled on the mold.

Consider that only wood of the finest quality is suitable for military aircraft, and the value of instruments developed at Madison for the detection of hidden defects becomes immediately clear. One of the most interesting of these provides a simple means of identifying "compression wood" in solid wood or veneer. It consists of holding a thin cross-section or a piece of veneer up to a bright light. The summerwood in "compression wood" is more or less opaque whereas normal wood is translucent. Many light boxes similar to this one developed at the laboratory were made and used by inspectors at plants making wood airplane parts during the war.

For the benefit of the lay reader, Dr. Stamm described "compression

wood" in these words: "When softwood trees lean they grow faster on the lower than on the upper side (hardwoods grow more rapidly on the upper side). The wood produced on the lower side is called compression wood and that on the upper side tension wood, because these two parts of a tree are under compression and tension stresses. Compression wood in softwoods has some very undesirable characteristics, and should be excluded from uses where stability and a high degree of strength are important. It shrinks excessively along the grain as it dries, in contrast with normal wood which shrinks so little lengthwise as to be negligible. When a board is cut out of a tree trunk so as to have compression wood along one edge and normal wood along the other, it will bow considerably as it dries due to the greater longitudinal shrinkage of the compression wood. If the compression wood is bounded on both sides by normal wood, it may pull itself apart. Again, if plywood is made up with normal wood on one side and compression wood on the other, it will warp badly."

(Next month—research in the lamination of wood ship timbers.)

## Pisgah Trout Waters

(From page 115)

G. Krueger, supervisor of the Pisgah National Forest. "This hatchery was built initially by the Forest Service and is handled on a cooperative basis with the Fish and Wildlife Service. Actually, the Fish and Wildlife Service operates the hatchery, while the Forest Service and Division of Game and Inland Fisheries of the State Department of Conservation and Development assist in stocking the streams.

"We try to plant fish in the Pisgah streams in accordance with the number we know to have been caught in either the previous season or in the earlier part of the season in progress. We make quite a number of these sustained plants, as we call them, in streams where we know the take by fishermen has been fairly heavy."

Although ready to admit that the program has been "quite successful in keeping the fishing on the Pisgah in a fairly satisfactory condition," Supervisor Krueger is quick to add

that "we most certainly do not know the answers to all of the questions that may arise. The maintenance of the fishing that does exist involves a great deal of hard work on the part of all concerned, and much more hard work will be needed in the future."

The writer, of course, will bow to Supervisor Krueger's judgment. Yet his first trip to the Pisgah was a revelation. A hardened trout fisherman—and fishing editor—who had to be shown, he came away highly enthusiastic. Every day he caught his limit of speckled beauties, releasing many trout of three varieties. And streams were not crowded, only a handful of fishermen were seen to each mile of wonderful wading water.

That these anglers shared the writer's enthusiasm was eloquently expressed in their happy faces as they lined up at the checking stations near sundown for the protection tally.

## Growing Profits in Pine

(From page 109)

The setting is perfect. Reynolds, leaning against the trunk of one of his beloved trees, smiles with those clear eyes of his and gives the facts.

"We figure that the Crossett Forest is producing new timber growth at a rate equivalent to about a million board feet a year on 1,680 acres. That's about 114 board feet an hour. When we deduct all of the costs of doing this scientific timber work, the taxes and other expenses, outside of the research costs, we find that we are netting \$18 a day, under prevailing market prices of timber."

Eighteen dollars a day! It doesn't take long to get out a pencil and multiply by 365 days, because, like Reynolds says, "trees work for you night and day, holidays and all." You come up with a tidy sum of \$6,570 a year!

Reynolds laughs at the amazement of his visitors. "And don't forget," he adds, "that it only takes part-time work. You have some time for fishing and hunting. And also don't forget that it takes some planning and work to get on easy street growing timber this way.

"You can't count your chickens until they're hatched," he cautions you. "Many woodland owners have much less timber volume and their forests are in poorer shape than ours. In such cases it may be a long time before they can show the returns we

are getting. In the meantime, it will be necessary to let the growth accumulate, pay annual taxes and other expenses." Visitors appreciate Reynolds' realism.

He holds up his hand and, counting on his fingers, says, "Here is what I think a timberland owner should do to manage his timber for the greatest income:

"First, make a management plan and decide what needs to be done and how you are going to do it.

"Second, get rid of your low-quality trees at the earliest possible time.

"Third, protect your timber from fire.

"Fourth, increase the volume of relatively large, high quality timber.

"Fifth, build up not only the quality, but also the quantity of your timber by cutting less than you grow.

"As a final word of advice, keep your work flexible so that all cutting and timber utilization can be constantly and closely correlated with market conditions and demands."

Visitors leave the Crossett Experimental Forest full of enthusiasm, inspired to get forestry going on their own lands. Last year Reynolds and his men conducted more than 730 people through the forest in 60 "show-me" tours.

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other forest research work centers in the South, Congress last year appropriated \$300,000 to expand the program. Charles A. Connaughton, director of the Southern Forest Experiment Station at New Orleans, says that by the end of 1946, the U. S. Forest Service expects to have 11 forest research farms in operation in the southern pine belt, extending all

the way from Virginia to Texas.

"For the South in particular, the results obtained from this program will be the base upon which forest farming—one of the most important enterprises in the entire regional economy—will be built," Connaughton states.

The work at Crossett has been well done. The trail is blazed.

## Whiskey Cooperage

(From page 130)

erage. During this hearing a number of distillery representatives brought out that the practice of using these barrels only once was without sound basis, besides being uneconomical. Judging from their testimony the representatives felt that such a regulation implies that whiskey stored in reused cooperage is inferior in quality and claimed that such is not the case. The following statement was made by Newell W. Ellison, representing Hiram Walker & Sons, Inc.: "The present regulation defining age, (and the amendment proposed in your notice of this hearing), are apparently predicated on the assumption that whiskey does not age in reused, or more properly, refilled whiskey cooperage. That is a false assumption. We are ready to prove and bring proper evidence to show the following: (1) That our light-bodied whiskeys mature in refilled cooperage and that the storing of light-bodied whiskey in refilled cooperage produces precisely the same balanced maturity as the storing of heavy-bodied whiskey in new cooperage; (2) that it is impossible for us to produce these high quality products in new charred oak containers; and (3) that the consumer has for 25 years prior to prohibition and continuously since repeal, consumed whiskies that were matured in refilled cooperage."

Officials of other distilling companies made identical statements.

If a high quality whiskey can be made in refilled white oak barrels and be favorably received by the public, surely it is absurd and wasteful to discard these once-used barrels when at least 75 percent of the value of the barrel remains.

Further evidence which belies the practicality of forbidding the use of reused cooperage is shown by the fact that Canadian, Scotch and French whiskies and brandies are stored and aged in used barrels. Their respective governments accord such whiskies full age values, and

these age values are accepted in the redistribution of those products in the United States. The popularity and wide acceptance of these products is undoubtedly due to their mellow flavor achieved by aging them in reused cooperage.

Scotch whiskey is stored and aged in used sherry casks and the color is mainly artificial, for very little is due to the wood extract. In France cognac is stored in steamed casks which have been used before in order to prevent an excessive wood taste. In America the highest quality brandies are produced in reused barrels and age may be claimed on them. It is well to bear in mind that with the end of the war there will necessarily be a period of reconstruction, which will make still larger demands on raw materials seriously depleted by war. Reconstruction means wood—wood for housing, wood for the re-adapting of industries, wood for hundreds of other uses.

White oak, because of its strength, beauty, and toughness which fit it for a wide range of uses, will be much in demand for reconstruction. But what about the supply of oak? According to a bulletin from the U. S. Forest Service for July, 1943, the supply of oak timber of a quality to yield high-grade lumber is being cut much more rapidly than it is being replenished by natural growth. As for white oak, it has been estimated that it now constitutes less than 45 percent of the oak stands. And, unfortunately, the white oak tree is neither prolific nor rapid growing.

In the opinion of the writers, the distilling industry alone could save millions of feet of high-grade white oak lumber every year by using and reusing their whiskey barrels instead of discarding them when used only once. The lumber spared could then be used in a hundred beneficial ways. Such a practice would not, it is felt, adversely affect the quality of the distillers' products and it would favorably affect and benefit lumber supplies.



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## READ WHAT MR. FORD SAYS

D. B. SMITH & CO., Utica, N. Y.

Gentlemen:

We have used your INDIAN FIRE PUMPS several years and they are without an equal in controlling fires which come across our fence lines. A fire seldom gets more than started before our Boy Scouts put it out with an INDIAN.

Yours very truly,

Hope H. Ford, Camp Director

A good scout must be able to put fires out as well as make them. INDIAN FIRE PUMPS operate so easily that boys—girls—women and men can and do use them for extinguishing all manner of fires. Easy pumping throws straight pressure stream or slight turn adjusts nozzle for fog mist or coarse spray as needed.

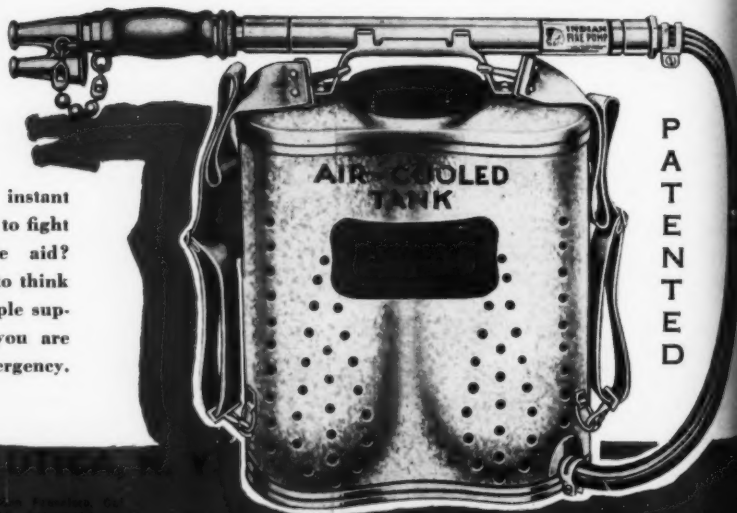
Spring will bring with it many fire hazards—be prepared—get your INDIAN FIRE PUMPS now. We can make prompt shipment.



### FIRE HAZARDS ARE INCREASED

with warm weather. NOW is the time to order a good supply of INDIAN FIRE PUMPS for spring and summer. Be prepared to fight all types of indoor and outside fires.

If fire struck this instant would you be ready to fight it without outside aid? That is something to think about. With an ample supply of INDIANS you are ready for any emergency.



D. B. SMITH & CO., 45 MAIN ST., UTICA, N. Y.

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